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NAMES II (NAVY AMPHIBIOUS MEDICAL EVACUATION SIMULATION) USER'S--ETC(U)

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NAMES II

(Navy Amphibious Medical Evacuation Simulation)

USER'S MANUAL

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20. Abstract (Continued)

medical treatments, or work units, which he must receive before he can enter convalescence and subsequently return to duty. These work units must be administered, in sequence, by designated medical personnel, and each work unit requires a specified time to complete. Some of these work units are critical in the sense that if one is not completed within a time specified by the user the patient will die, if another is not completed in time, the patient's convalescent period will be increased. An evacuation vehicle is requested at once when a high priority patient enters an evacuation queue; lower priority patients are required to accumulate in number or for a period of time before an evacuation vehicle is requested. A simulated patient in NAMES II is evacuated from a medical facility for any of the following three reasons: (1) no qualified medical treater (for the patient's next work unit) is assigned to the facility; (2) the patient has received enough work units so that he can be moved safely, and his convalescent time (user specified) exceeds the facility evacuation policy, i.e., the period of time which a patient is allowed, by military considerations, to remain at a facility; and (3) the patient has completed all of his work units, but the facility has no convalescent beds available.

The model will accept any specified casualty admission rates, and is not dependent upon sub-models which relate battle scenarios, troop strengths, climate and terrain to casualty generation rates. Thus, medical and tactical planners can vary the patient "mix" and use the NAMES II Model to observe the effects of different weapons systems, of different patient loads, and of improved medical techniques.

The NAMES II Model can be manipulated by the user in many ways. In addition to specifying the resources at each facility, e.g., medical personnel, beds, and vehicles, the user specifies the number of medical facilities, the distances between them, and he also specifies rules for the employment of evacuation vehicles. These rules include vehicle capacity and speed, which patients should be loaded on a vehicle, a vehicle's destination, and which patients should be unloaded at that destination. By selecting these rules properly the user may (1) restrict the type of evacuation vehicle to be employed at each facility; (2) restrict the destinations that can be reached directly from each facility; (3) restrict the patients that can use each type of evacuation vehicle; and (4) specify that certain patients must be evacuated to specific facilities.

NAMES II output reports include various measures of patient dispositions, including the number who die, the number who return to duty and the number evacuated out of the combat zone; measures of lost time due to injuries and illness, resource requirements, and resource utilization. NAMES II has already demonstrated that previous methods for computing combat medical bed requirements, based on bed occupancy in World War II and other combat situations, do not give reliable results. NAMES II computes bed requirements based on the simulated battle casualties, the resources of the evacuation system, and the evacuation policies in force in the combat zone.

The NAMES II Model is currently operational on a CDC (Control Data Corporation) 6600 computer system. The computer program is written in the SIMSCRIPT II.5 simulation language.

This report is addressed to the user of the NAMES II Model—the analyst who wishes to employ the model to design, plan, or evaluate combat zone medical treatment and evacuation systems. The User's Manual presents a detailed description of the NAMES Model, together with its inputs and outputs. The Manual also discusses some results which were obtained from the model to illustrate the types of analysis that can be performed with the model. Additional details of the NAMES II Model operation will be contained in the Program Maintenance Manual.

use
outputs

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NAMES II
(Navy Amphibious Medical Evacuation Simulation)
USER'S MANUAL

INTRODUCTION

The original version of NAMES (Navy Amphibious Medical Evacuation Simulation) became operational in September, 1975. Written in the SIMSCRIPT I.5 simulation language, it soon displayed its power as a tool for medical contingency planning and also as a research tool.^[1] It also demonstrated that standard techniques, developed in World War II, for determining medical personnel and bed requirements are inaccurate. NAMES I, as it was subsequently called, was apparently the first military medical evacuation model to be based completely on logical relationships. In NAMES I, patients died if they did not receive adequate treatment in time; they were evacuated from a facility if that facility did not have appropriate medical personnel, or if their convalescent time exceeded the facility's evacuation policy,* or if the facility's bed capacity was inadequate. No other known model based all of its consequences and actions on logical relationships.

The development of NAMES II in SIMSCRIPT II.5 was undertaken in mid-1976 in order to give the military an even stronger research tool than the first NAMES. The Office of Assistant Secretary of Defense for Health Affairs (OASD(HA)) wanted a model capable of assisting military planners in evaluating various medical regulating procedures so that the procedures finally adopted as policy would be the most efficient medical regulating procedures. This required the model to accept user-specified evacuation procedures, including vehicle loading rules, vehicle destination rules, vehicle unloading rules, and restrictions on the assignment of patients to evacuation vehicles as well as to certain medical treatment facilities. It was decided that the best way to accomplish these objectives would be to develop NAMES II, using the more powerful SIMSCRIPT II.5 simulation language.

NAMES II first became operational on the CDC (Control Data Corporation) 6600 computer system in December, 1976, and has undergone additional changes since that time in order to incorporate further medical regulating capabilities requested by the U.S. Army TOMSS (Theater of Operations Medical Support System) Study Group. NAMES II has since been used to assist the TOMSS Study Group, and its concepts are currently being studied and used by the Medical Board of the Swedish Armed Forces. NAMES II has also attracted the attention of the Defense Civil Preparedness Agency,

* the period of time which a patient is allowed, by military considerations, to remain at a facility.

Note: Manuscript submitted July 15, 1977.

the Maryland Institute for Emergency Medicine, and the Air Line Pilots Association. These organizations are concerned with the development of systems to cope with civilian medical emergencies, ranging from every-day automobile accidents to mass casualty situations such as earthquakes and aircraft accidents.

This report is addressed to the user of the NAMES II Model -- the analyst who wishes to employ the model to design, plan, or evaluate combat zone medical treatment and evacuation systems. The User's Manual presents a detailed description of the NAMES Model, together with its inputs and its outputs. The Manual also discusses some results which were obtained from the model to illustrate the types of analysis that can be performed with the model. Additional details of the NAMES II Model operation will be contained in the Program Maintenance Manual.

GENERAL DESCRIPTION OF THE NAMES II MODEL

The NAMES II Model is capable of simulating various configurations of the basic medical treatment and evacuation chain illustrated in Figure 1. Casualty receiving facilities may be added or removed (completely, if desired) at any facility levels or echelons, and additional levels may also be inserted into the model. As each patient enters the system, he is classified according to the nature and severity of his wounds or illness by assigning him to one of a set of user-defined patient classes which encompass all types of anticipated casualties, including outpatients as well as inpatients. A patient may enter the system at any facility level. The distribution of entering patients over all levels is specified by the model user. The user also selects the second facility level to which a patient should go if he must be evacuated from his entry level. The class to which a patient is assigned determines to a large extent his flow through the evacuation chain and his processing at each facility that he enters. Each inpatient's class determines which of three priorities he will be assigned: Priority 1, "urgent," indicates that the patient is in critical condition and must receive the most expeditious attention in order to save his life; Priority 2, "immediate," indicates that the patient's condition is very serious and he must be treated without delay; Priority 3, "routine," indicates that the patient is serious enough to require admission to the medical system, but requires no special attention to treat his condition. Outpatients are assigned Priority 4, which indicates that those patients may wait for treatment until there are no other patients at a higher priority requiring commitment of treater resources. Each patient's class also indicates whether he occupies a litter or ambulatory status, and assigns to the patient an ordered sequence of medical treatments, called work units, which the patient must receive before he can convalesce and return to duty. The user must specify the work units, in their proper sequence, for each patient class. The user must also identify, within this sequence, a Critical Mortality Work Unit, a Critical Convalescent Work Unit, and a work unit which is called the patient's First-Aid Work Unit. The same work unit may be identified for all three if the user desires. These three work units have a considerable influence on the patient's treatment and ultimate disposition. If the patient's Critical Mortality Work Unit is not completed in a time specified by the user, he will die; if the patient's Critical Convalescent Work Unit is not completed in a time specified by the user, his convalescent time, originally selected at random from a probability distribution which is provided by the user for each patient class, will be multiplied by a factor specified by the user; finally, the patient will not be evacuated from a medical treatment facility (except the medic level) until his First-Aid Work Unit is completed, provided appropriate treaters are assigned to the facility to provide all work units up to and including his First-Aid Work Unit. Upon completion of the patient's First-Aid Work Unit and each subsequent work unit, his convalescent time, which may now have been increased, is compared to the facility evacuation policy, i.e., the period of time which a patient is allowed, by military considerations, to remain at the facility. If his convalescent time exceeds the evacuation policy, he will be stabilized for a period of time specified by the user, and then evacuated from the facility. The First-Aid Work Unit guarantees that the

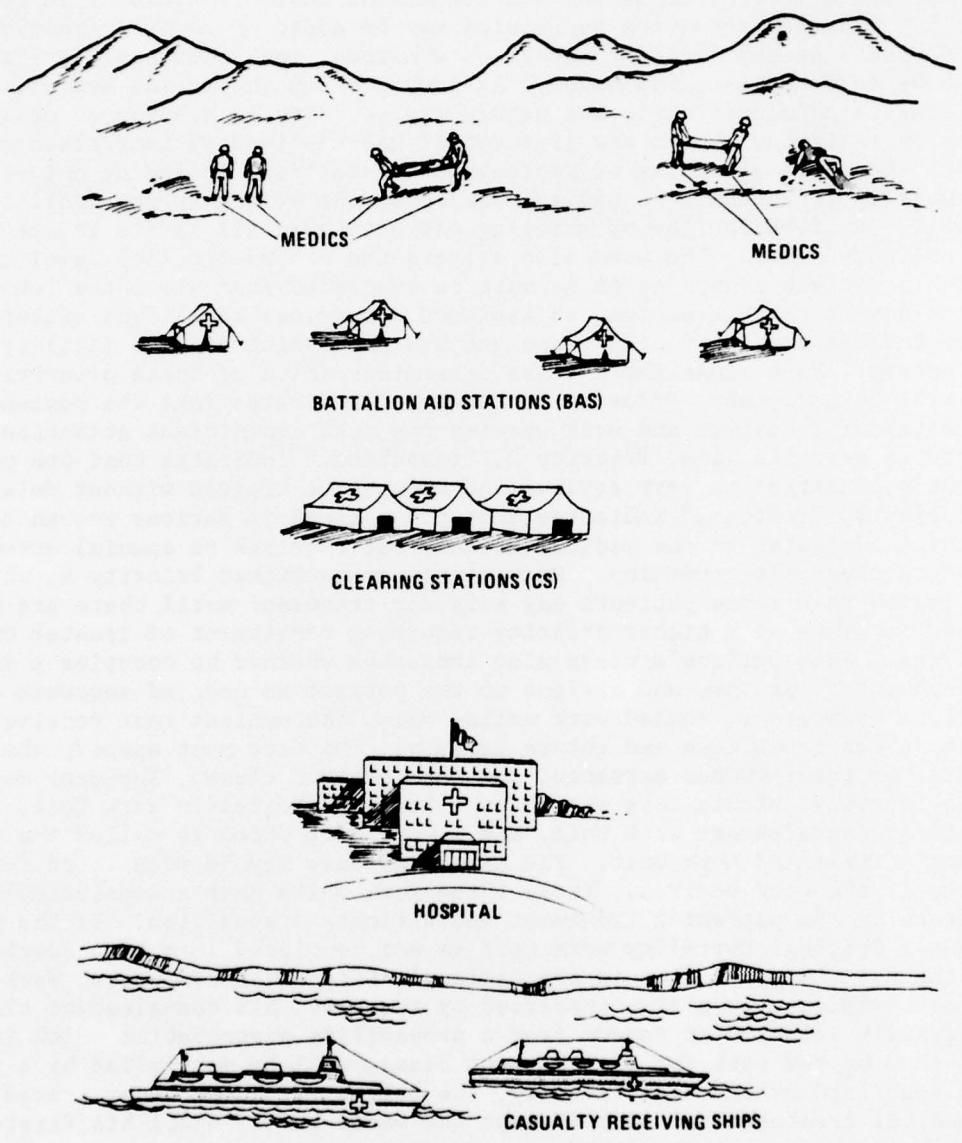


Fig. 1 — Basic chain of evacuation

patient will not be evacuated until it is medically feasible to move him, provided required treaters are assigned to his facility.

The user also has the option of assigning each patient (by class) a Mortality Threshold Time. If a patient is so designated, he will die if his initial medical treatment (triage and first aid) at his entry facility is not begun within the designated Threshold Time. This added feature allows the user to identify and observe those patients who require prompt emergency care, such as respiratory resuscitation or sealing of a sucking chest wound, in order to survive.

If the user does not identify a Critical Mortality Work Unit, or a Critical Convalescent Work Unit, or a First-Aid Work Unit for a patient class, the model assumes that those work units have already been completed before the patients in that class enter that facility. This means that a patient who has no Critical Mortality Work Unit cannot die no matter how long he waits for treatment; a patient who has no Critical Convalescent Work Unit can experience no possible increase in his convalescent or recovery time, contrary to what might be expected from complications caused by delays in receiving certain work units. If a patient has no First-Aid Work Unit, he will be stabilized and evacuated, without receiving any of his required work units, if his convalescent time exceeds the facility evacuation policy. This will happen to such a patient even though medical personnel who could save his life may be sitting idle at the facility. If a Mortality Threshold Time is not specified for a patient class, the model assumes that the patients in that class need not begin treatment in any specified time, except those times associated with other identified Critical Work Units.

NAMES II computes patient arrivals based on a Poisson arrival pattern. (Many other probabilistic patterns could also be used.*) This is mathematically equivalent to assuming that the time interval between successive arrivals (interarrival time) is a continuous random variable whose density or frequency is given by the exponential density function

$$f(\lambda, t) = \lambda e^{-\lambda t},$$

where λ = mean arrival rate.

The cumulative interarrival time is then given by

$$P(\lambda, t) = \int_0^t f(\lambda, t) dt = 1 - e^{-\lambda t}.$$

The mean arrival rate λ during a specific hour of a particular combat day is computed from the mean number of arrivals on that day and the proportion of patients who arrive during that hour; both are specified by the NAMES user. $P(\lambda, t)$ is next selected as a number between 0 and 1

* SIMSCRIPT II.5 has routines for using the following probability functions: Beta, Binomial, Erlang, Gamma, Normal, Log Normal, Poisson, Exponential, Uniform, and Weibull.

by a random number generator, one of which is reserved exclusively to generate inpatients, and another to generate outpatients. This gives a unique value of λt (since P is monotone increasing), from which the interarrival time t is then computed by using the value of λ just calculated.

If the computed interarrival time t would cause the next patient to arrive during the next hour, instead of during the current hour, he is not generated. Instead, a new patient is generated, based on the new λ for the next hour, and the newly calculated interarrival interval is made to begin at the start of the next hour. This guarantees that the next patient enters during the next hour.

If the mean arrival rate $\lambda = 0$ during a specific hour of any combat day, the computer program proceeds to the next hour until it computes a non-zero λ .

The first inpatient is generated at the start of the first hour of combat during which inpatient casualties occur, as specified by the user. On the arrival of each inpatient, the succeeding inpatient is generated. The same procedure is followed separately for outpatients.

When a patient is generated, his patient class is determined randomly from the distributions (inpatient and outpatient) provided by the user. The facility level at which each patient enters the evacuation chain is selected randomly from input provided by the user. The specific facility that the patient enters is randomly selected from a uniform distribution over all facilities at that level. The mobility of each inpatient (ambulatory or litter) is randomly determined according to user input associated with the patient's class. In addition, each inpatient's convalescent time is randomly selected from a distribution provided by the user and associated with his patient class. Other attributes of an inpatient, such as priority and work units, are assigned according to the patient's class, and are determined by the user.

All outpatients are considered to be ambulatory; they have no convalescent time assigned at the time they are generated, and they are all assigned Priority 4. The remaining attributes of outpatients, including their work units, are assigned according to the patient class and selected by the user.

If the user chooses to identify outpatients with patient classes which are associated with inpatients, then those outpatients will have to receive the same work units as the inpatients. The only difference between outpatients and inpatients in the same class is that the outpatients are originally assigned a convalescent time of zero. If they fail to receive their Critical Convalescent Work Unit in time, their convalescent time becomes one day.

NAMES II uses different random number streams for each of the twelve variables that are determined on a probabilistic basis --

7 for each inpatient: arrival time, patient class, entry facility level, entry facility, mobility, convalescent time, and first aid time at the FEBA (a random number between 6 and 19 minutes).

5 for each outpatient: arrival time, patient class, entry facility level, entry facility, and first aid time at the FEBA (a random number between 6 and 19 minutes).

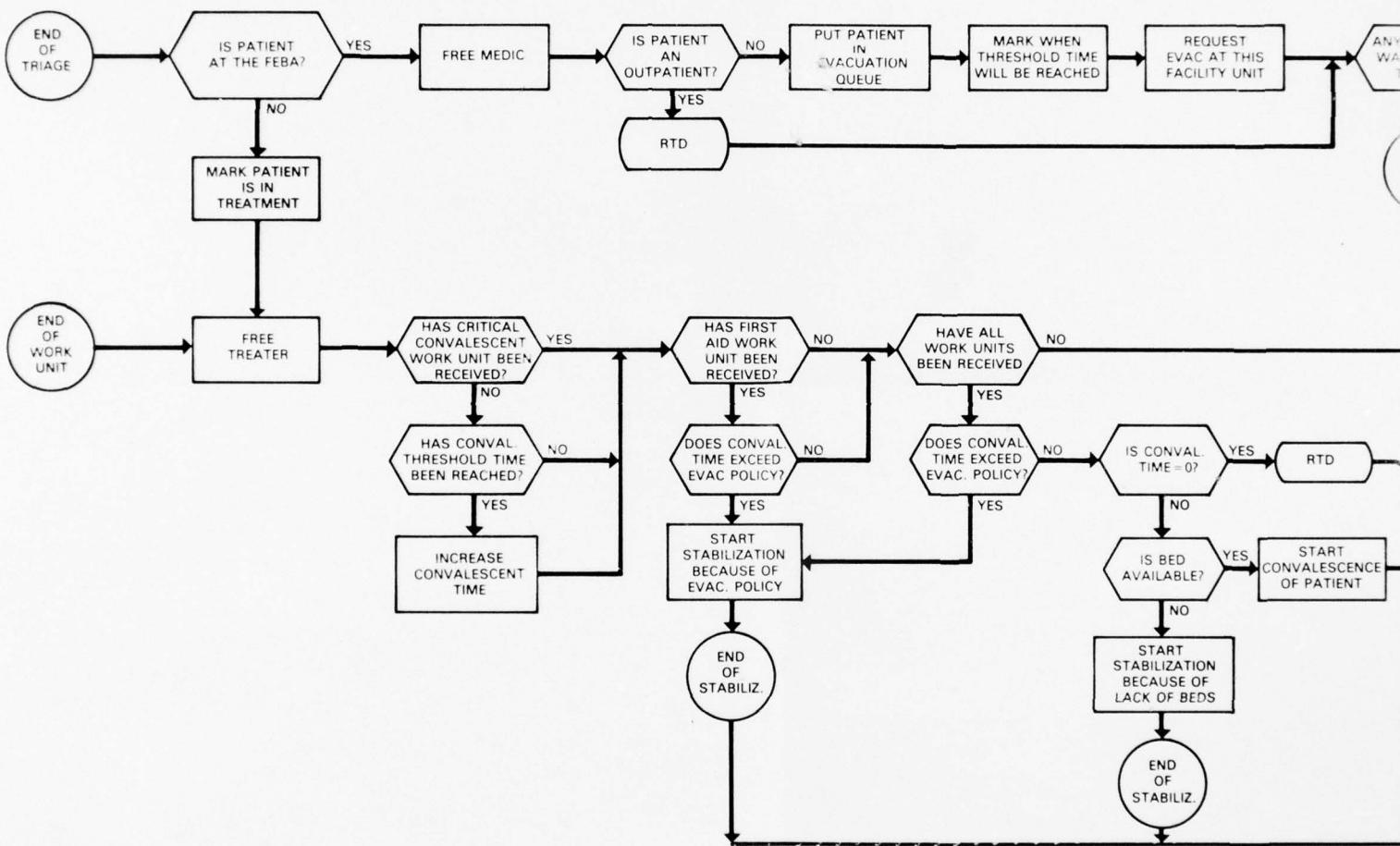
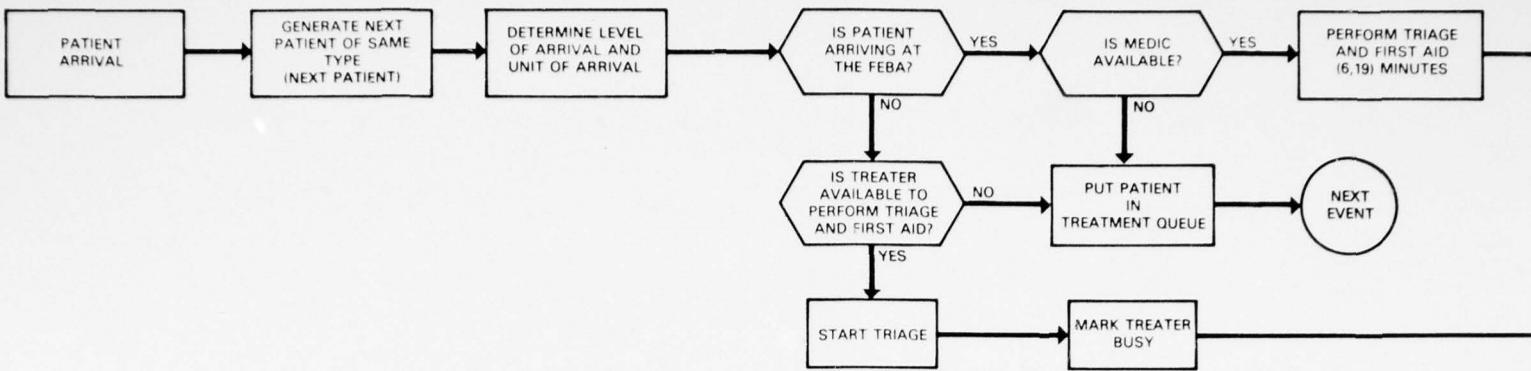
These twelve random number streams were deliberately separated in NAMES II so that the user could change one or more random variables at a time without affecting the others. For example, the user may select to omit all outpatients in one simulation. If the same random number stream was used to generate both inpatients and outpatients, the random variables for inpatients would be affected by omitting the outpatients. This cannot happen in NAMES II.

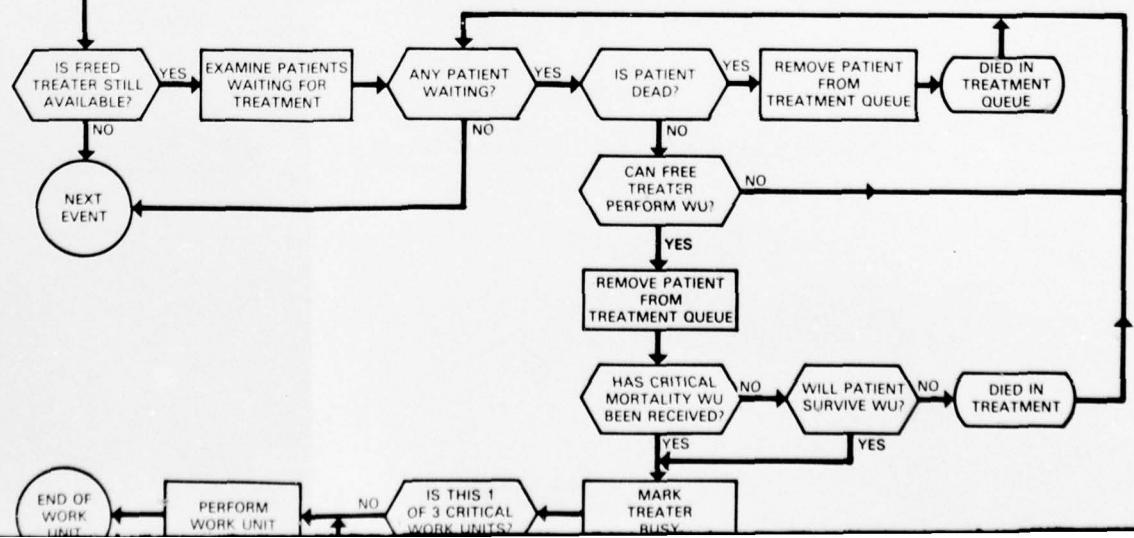
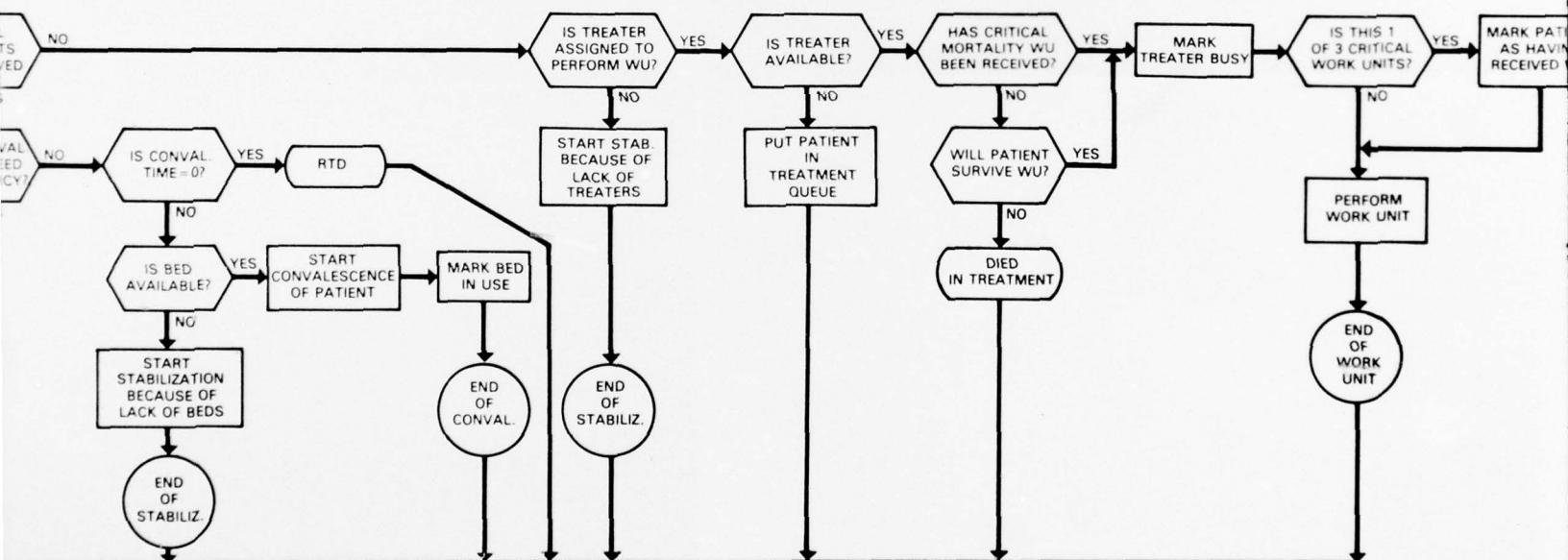
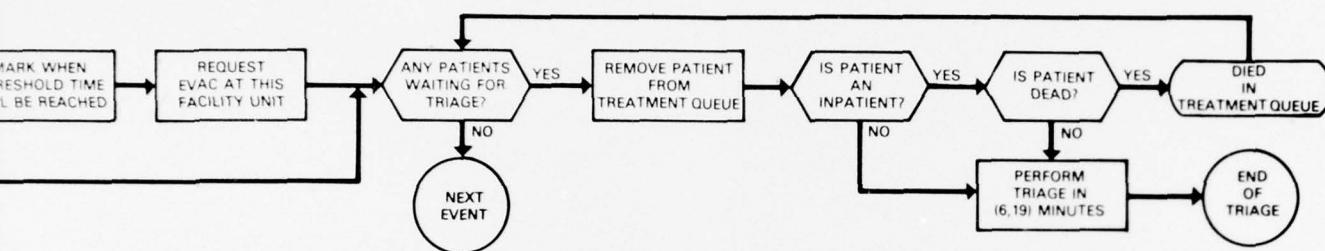
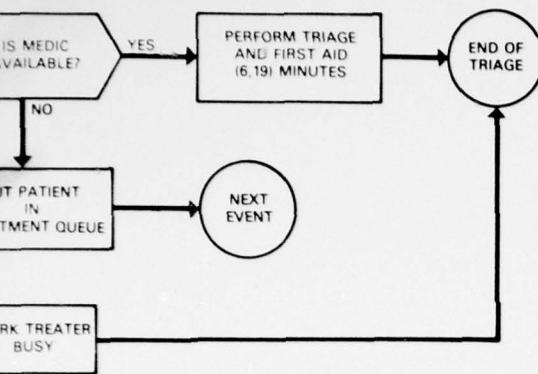
The treatment pattern of patients within a specific treatment facility is described in Figures 2(a) and 2(b).

At the medic level, or Forward Edge of the Battle Area (FEBA), all patients undergo triage and receive first aid on a first-in, first-out basis. Inpatients who survive this initial treatment are then evacuated to the rear for further treatment; outpatients are returned to duty. At all facilities except at the medic level, patients are treated on a priority basis. After undergoing triage and first aid, each patient receives his sequence of work units, provided appropriate treaters are assigned. The NAMES II Model allows flexibility in designating treaters by allowing the user to identify preferred and alternate treaters for each work unit. An expected treatment time is associated with each treater's performance of a particular work unit. If an appropriate treater is not assigned to the facility level, the patient is stabilized and evacuated to the rear. Otherwise the patient continues to receive his ordered sequence of work units.

If a patient is able to receive all of his required work units and if his convalescent time does not exceed the evacuation policy at his facility, he will enter a convalescent ward and return to duty from that facility if the convalescent bed capacity is sufficient. Otherwise he will be stabilized and evacuated further to the rear. If a patient enters a facility for convalescence only, triage is not performed. If his convalescent time is within the limits of the facility's evacuation policy and if a bed is available, he remains at this facility for his period of convalescence and is subsequently returned to duty. Otherwise, he is evacuated to the next facility.

Two of the factors which cause a patient to be evacuated (treaters and bed capacity) are measures of the resources of the evacuation chain; the third (evacuation policy) is a command policy. The order in which





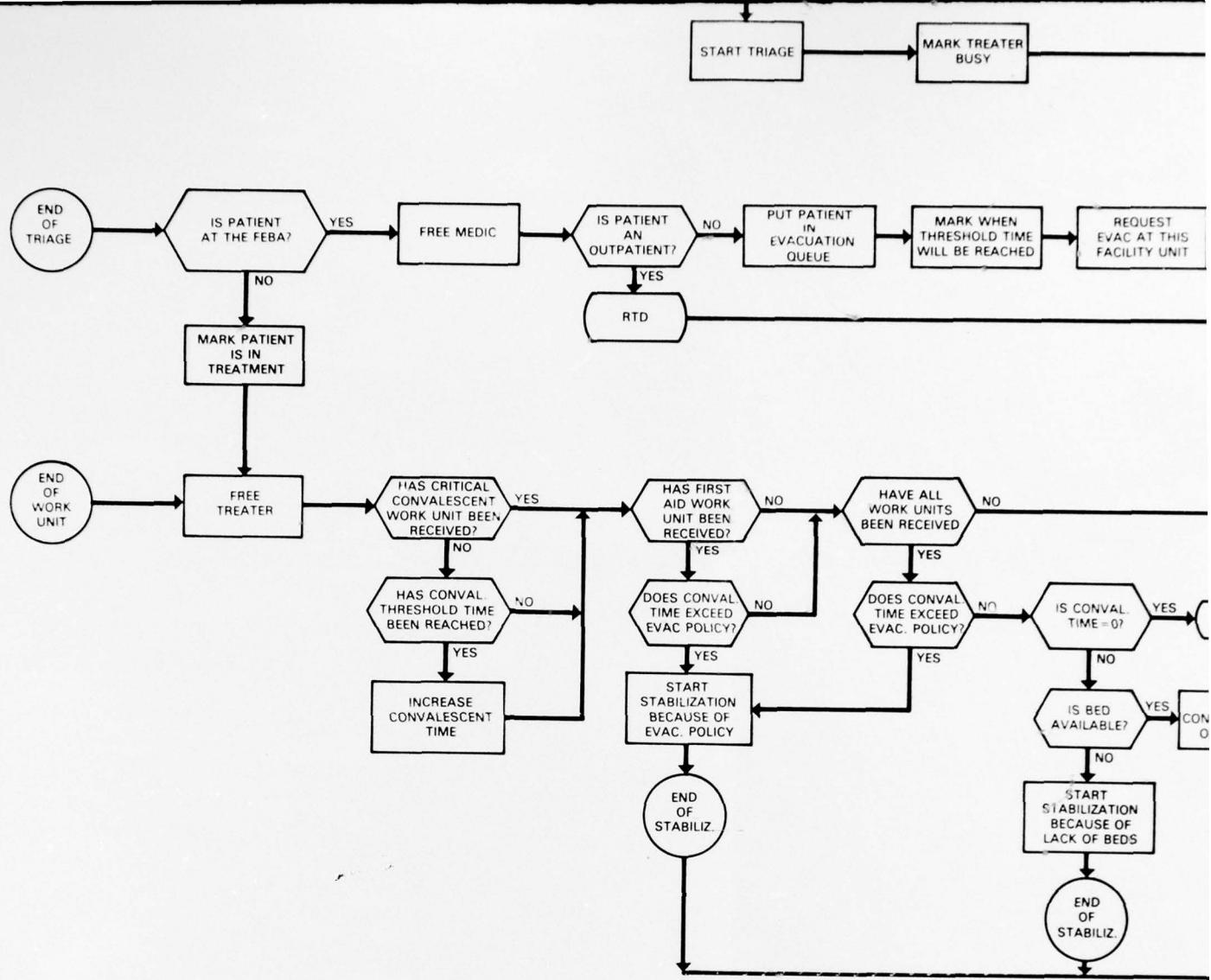
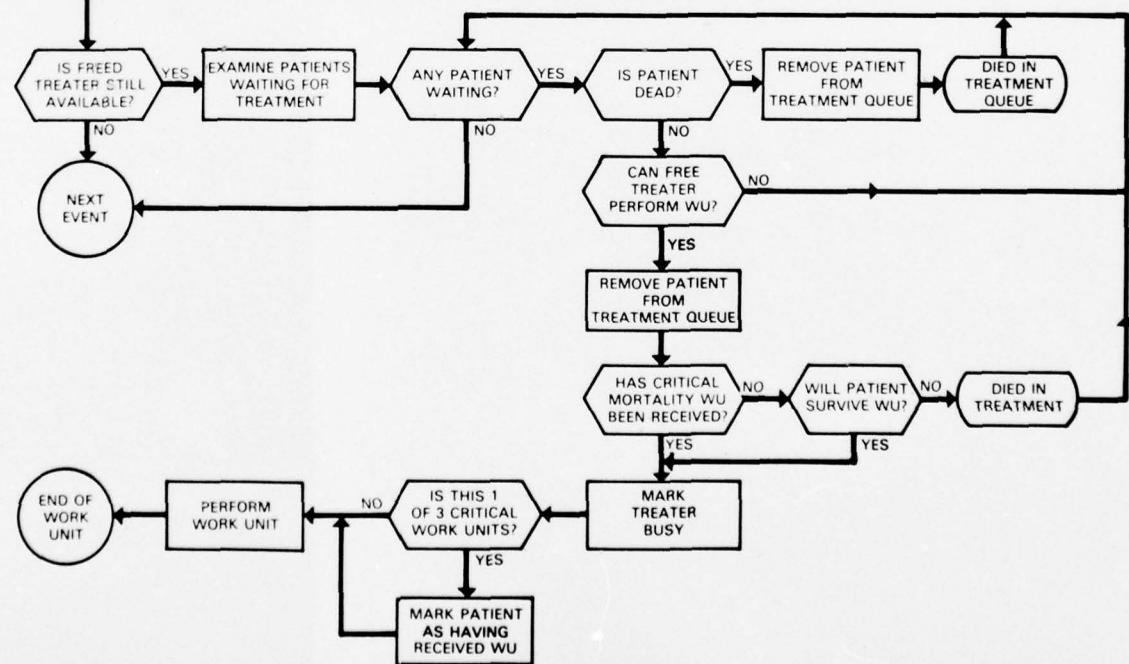
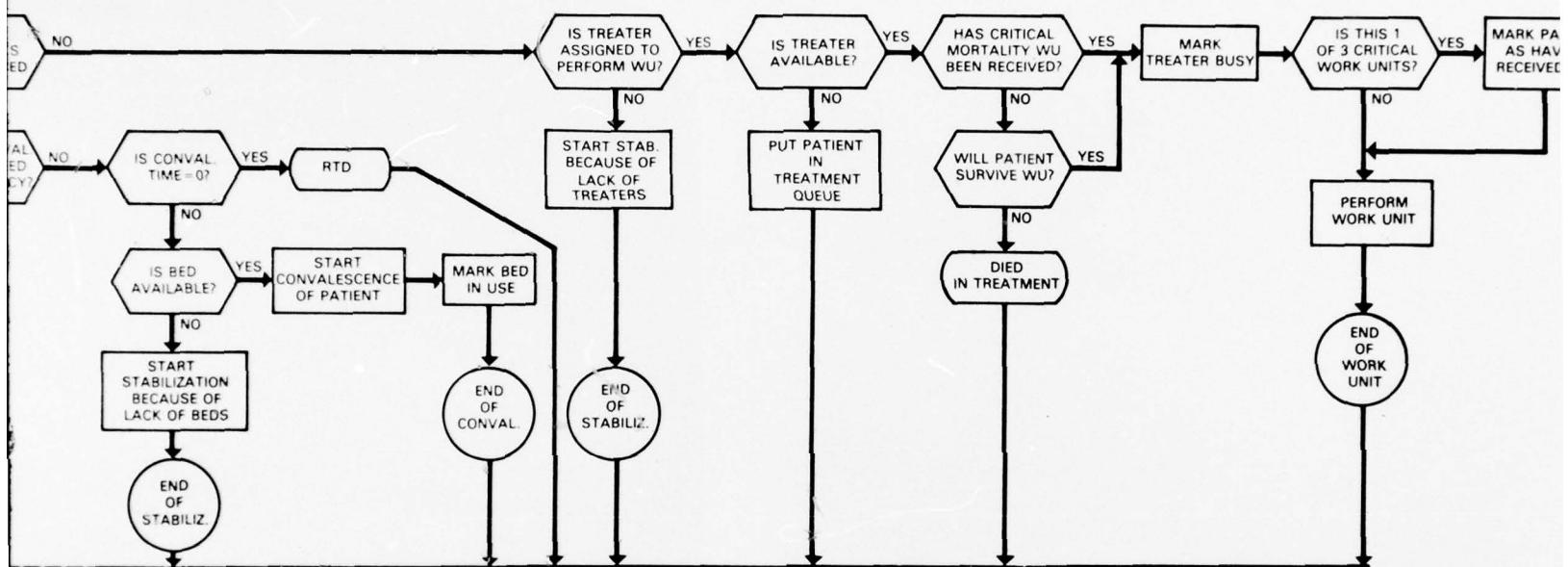
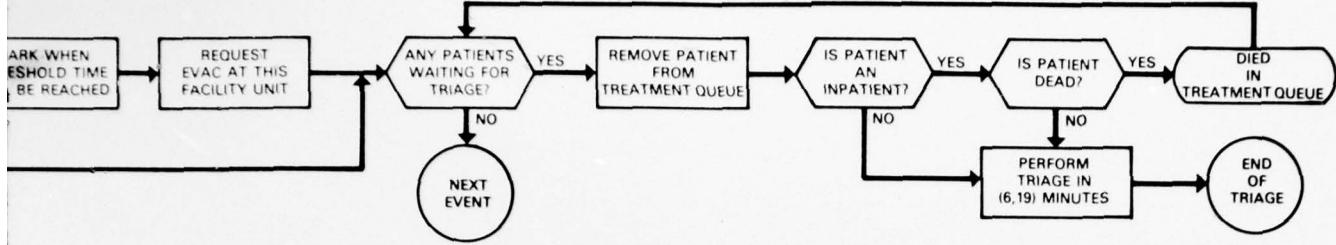


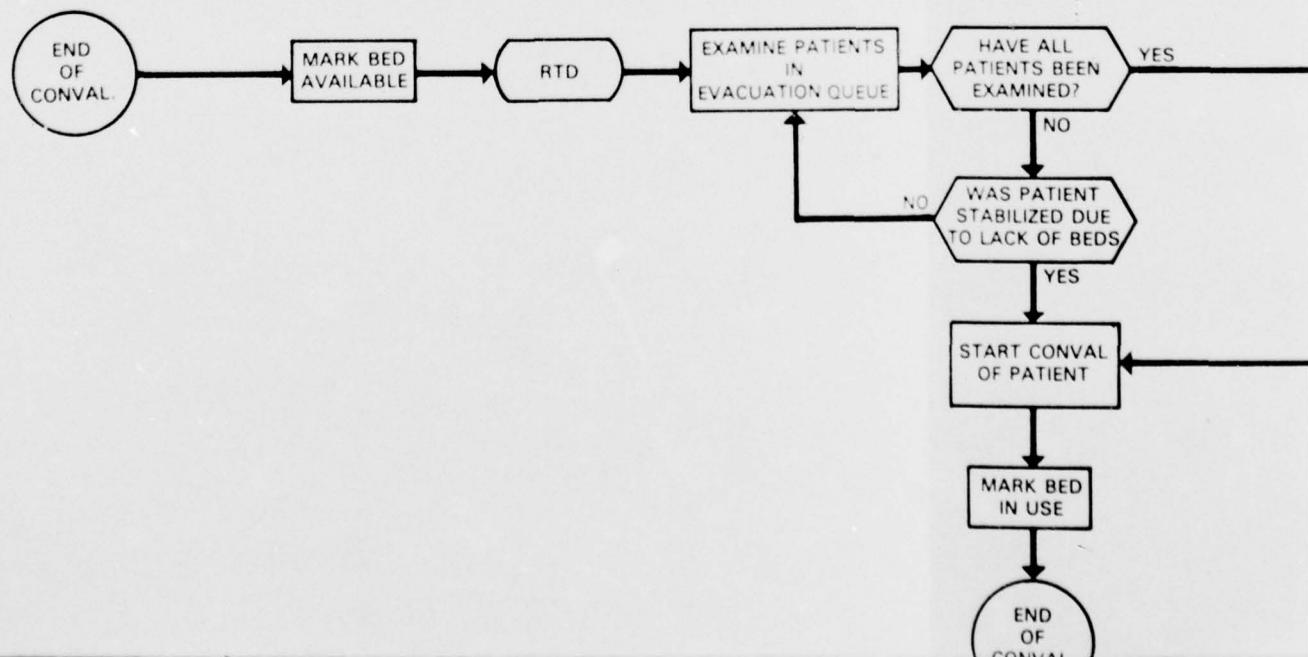
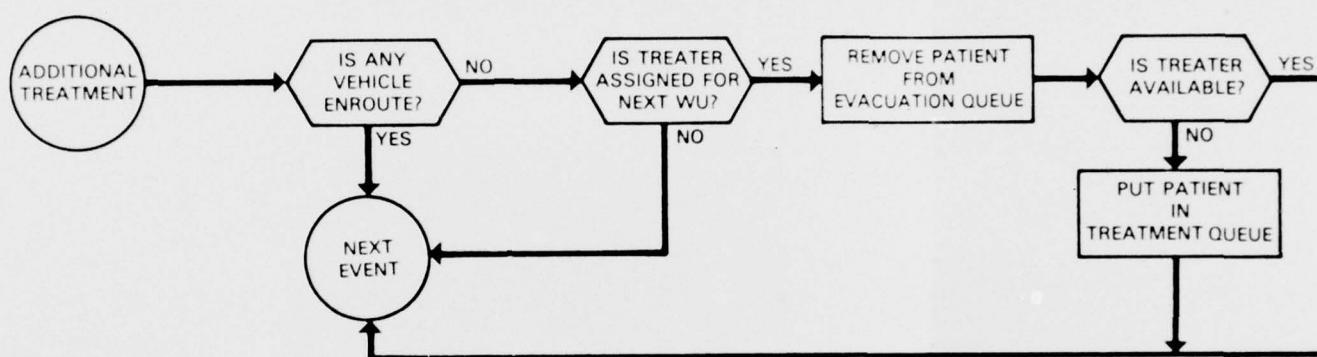
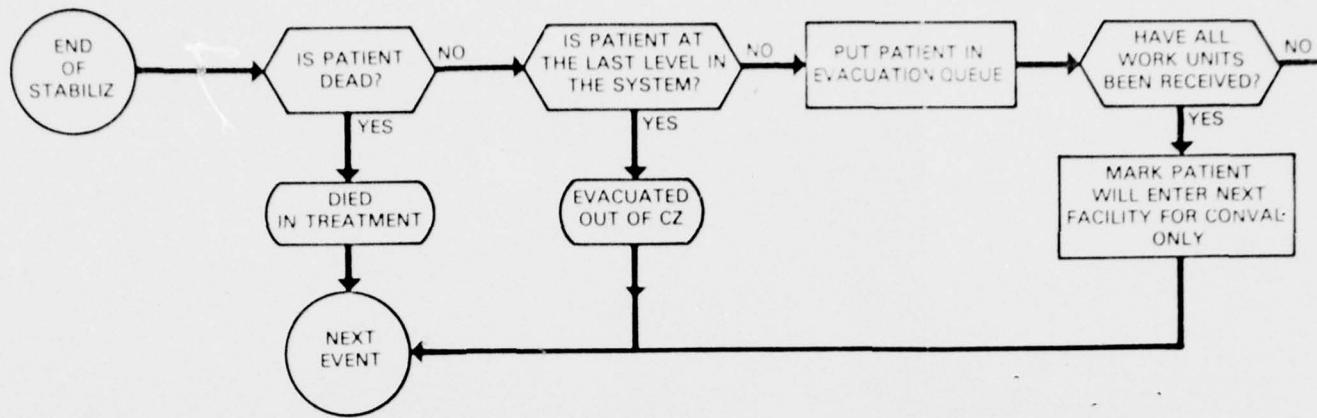
Fig. 2(a) — Patient treatment pattern

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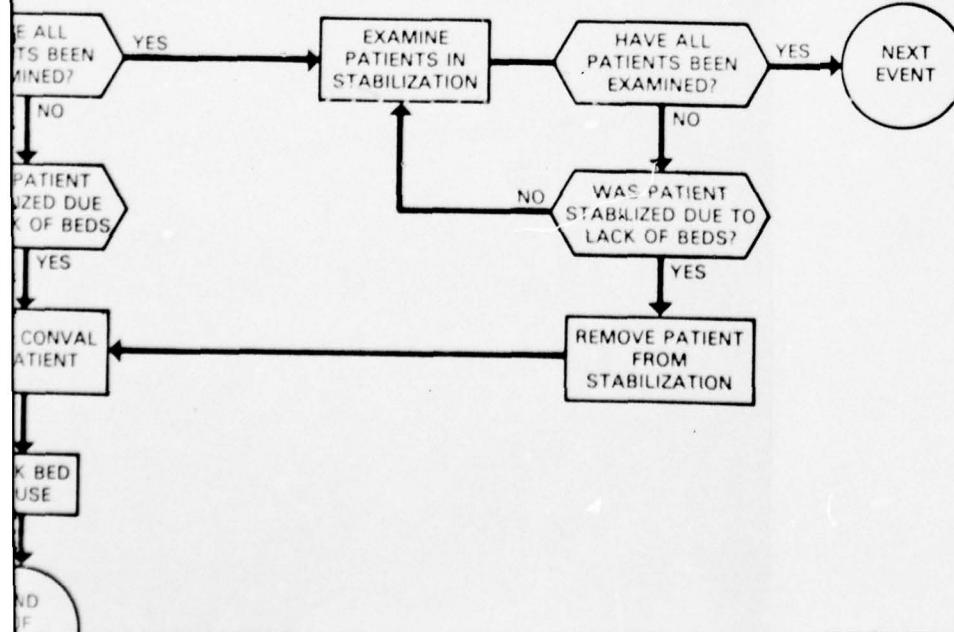
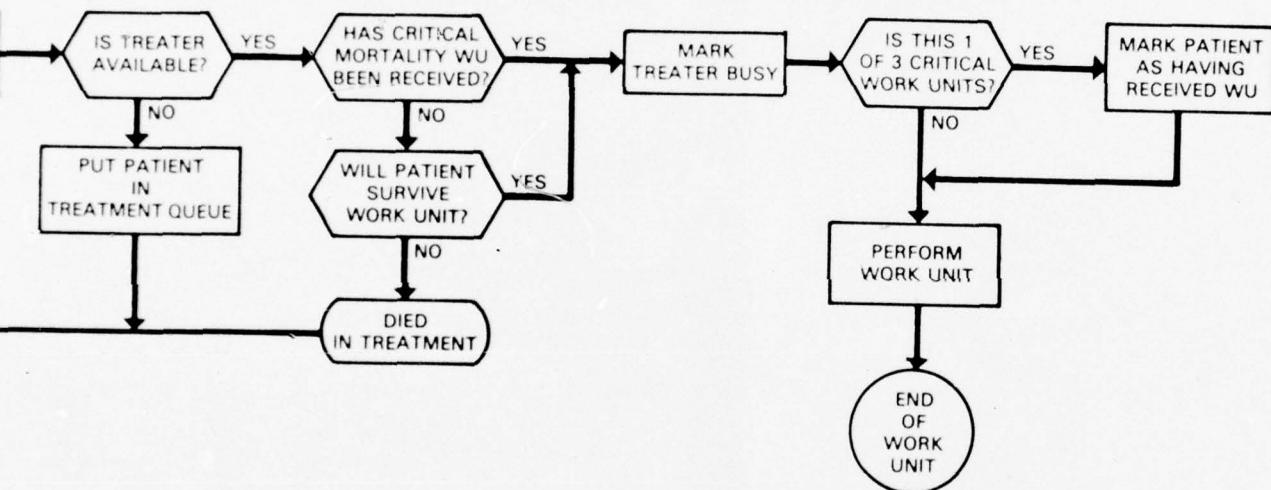
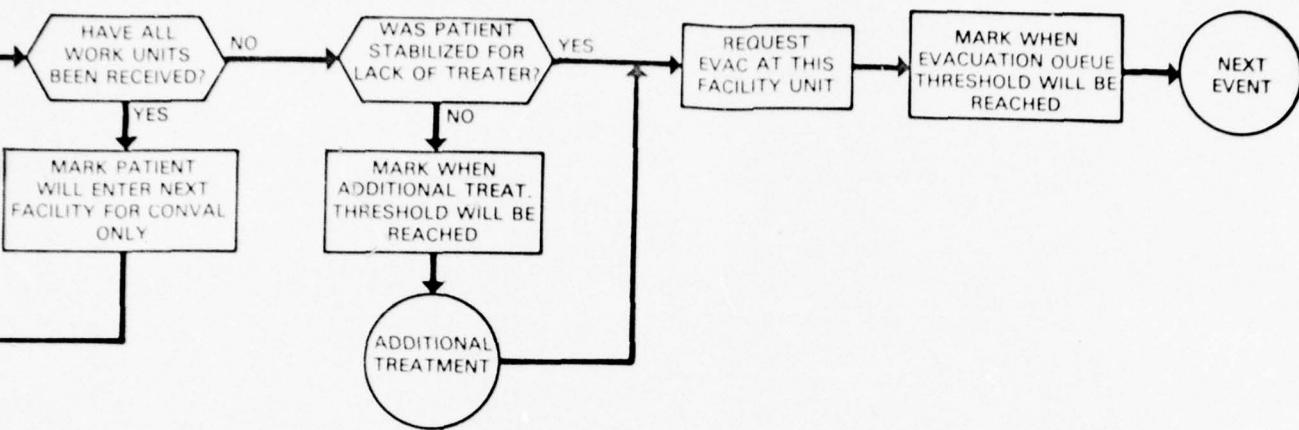
TREATER
BUSY



2(a) — Patient treatment pattern within a facility (Continues)



2



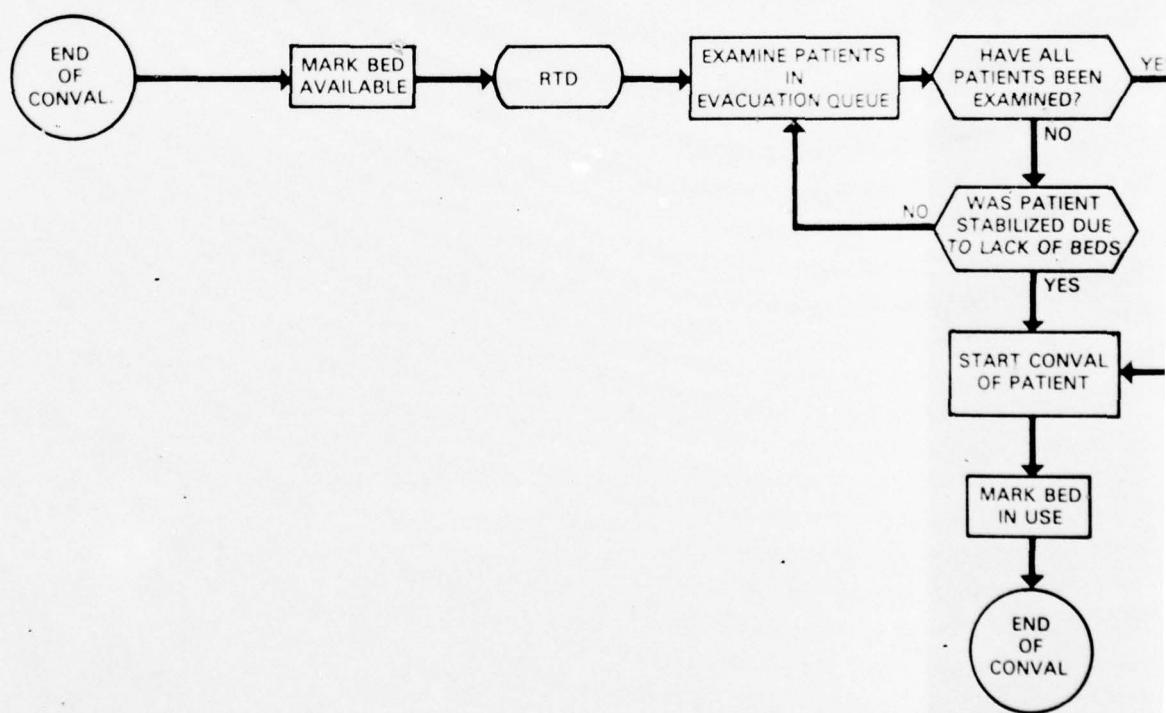
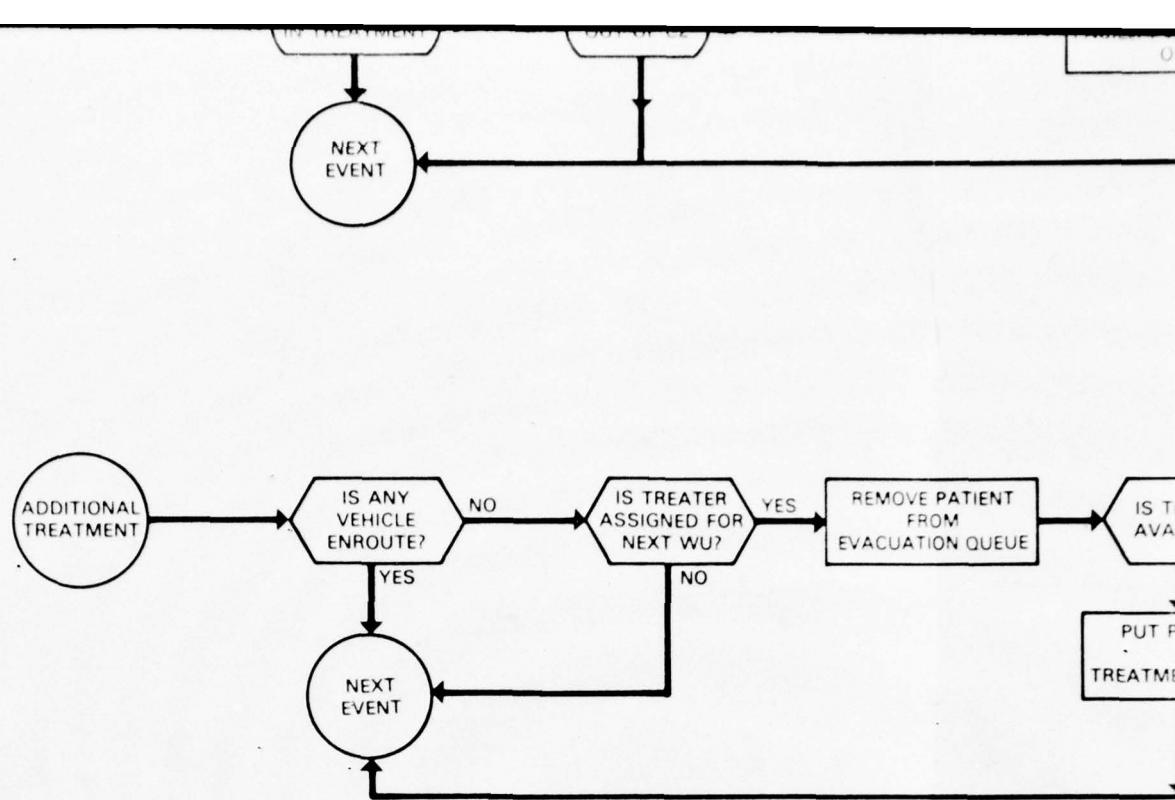
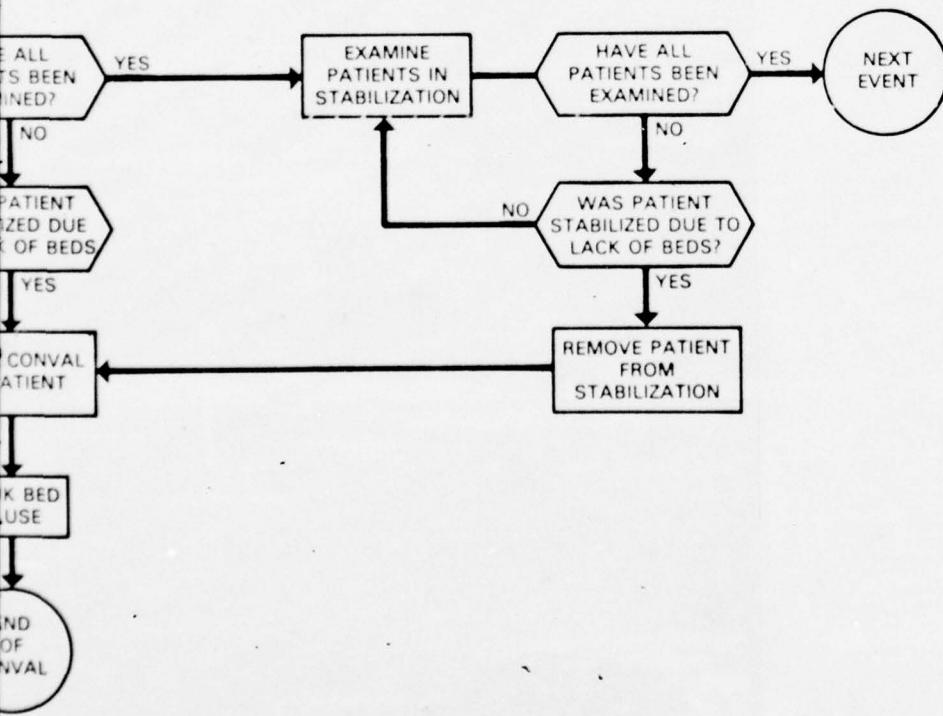
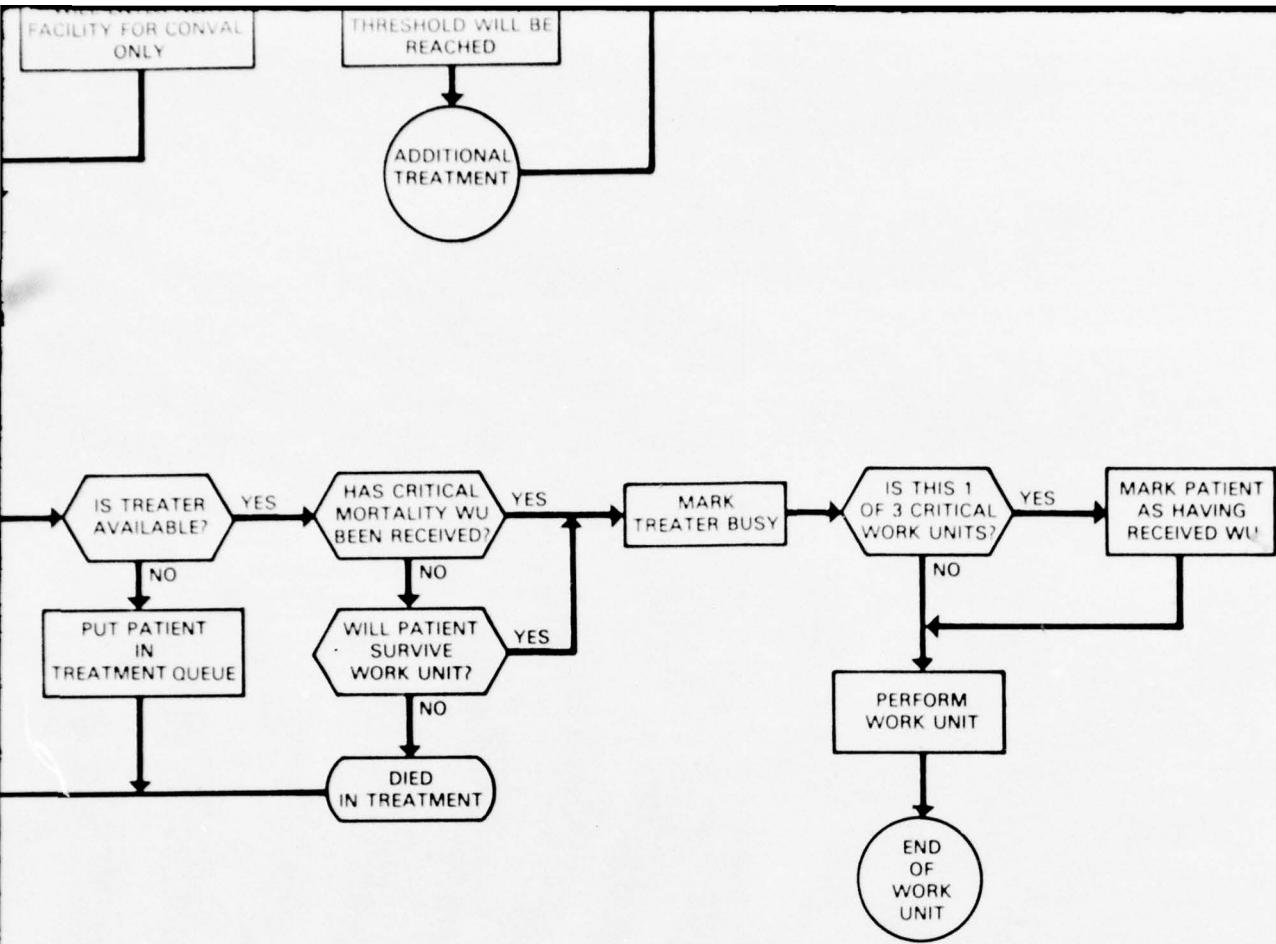


Fig. 2(b) (Continued)



2(b) (Continued) — Patient treatment pattern within a facility

these factors enter a patient's processing within the NAMES II Model is considered to be logical -- if necessary treaters are not assigned, the patient must go elsewhere for treatment; once his First-Aid Work Unit is received and he can be moved safely, he should be evacuated as soon as possible if it is known that he must be evacuated anyway; finally, if his facility has enough convalescent beds allocated, and if his convalescent time falls within the evacuation policy of the facility, he should be retained at this facility and returned to duty, and not evacuated further to the rear.

The NAMES II Model is capable of simulating the patient evacuation process using two classes of vehicles, air and ground. Either class may be stationed at any casualty receiving facilities and/or at a central dispatch location or pool. The number of vehicles in each class is specified by the user, as well as the vehicle speed and capacity. The model currently treats the first class as ground ambulances, and the second as helicopters. An ambulance operates twenty-four hours a day. A helicopter operates during daylight hours* only, unless it is responding to a request to evacuate an urgent patient. In that case it will fly at any time.

New features which have been incorporated in the NAMES II Model enable users of the model to specify various rules for the employment of medical evacuation vehicles, both helicopters and ground vehicles. This allows the user to test different medical regulating procedures.

These rules may be selected by the user for each facility level within the medical evacuation chain. Having already specified the geographic location of each facility level, the number and type of evacuation vehicles assigned to each facility, the number of beds available, the evacuation policies, the medical treaters (surgeons, corpsmen, etc.) as well as the classes of patients who can receive treatment at each level, the user first designates, for each facility level, other locations from which evacuation vehicles may be requested. These vehicles may be at this facility, at other facilities, or in a central pool. The user then selects one of various rules that governs which patients will be loaded on an evacuation vehicle if this particular facility is the first pick-up stop for that vehicle. He also selects the destination of the vehicle. If this is the second stop for an evacuation vehicle which already has patients on board, the user may decide who is to be unloaded, which patients at this facility are to be put on board the vehicle after it is unloaded, and what the vehicle's next destination should be. The user also has the option to make similar inputs if this particular facility is the third or subsequent stop for a medical evacuation vehicle.

A relatively simple format has been prepared to assist the user in preparing these inputs.** Typical rules which users of the NAMES II Model might want to test are shown on the following page.

* As specified by the user.

** A sample format is contained in Appendix B.

Rules that govern facility levels from which evacuation vehicles may be requested.

- R1 - closest support facility (including requesting facility).
 - R2 - closest support facility that has a vehicle available (including requesting facility).
 - R3 - pool.
 - R4 - first from the pool; if none available, from the closest support facility that has a vehicle available.
 - R5 - first from the support facilities, starting with the closest; if none available, from the pool.
 - R6 - from user-selected support facility.
 - R7 - next facility to the rear.
- (all of these rules can be included at once by listing each choice of facility in order of preference)

Rules that govern which patients are loaded on a vehicle.

- L1 - none.
- L2 - all who will fit, by priority.
- L3 - selected priorities only.
- L4 - patients who are designated to go to facilities which have been designated for patients already on board.

Rules that govern vehicle non-stop destination.

- D1 - home facility. (user specified)
 - closest support facility. (user specified)
 - other facility designated by user.
- D2 - remain at present facility to await evacuation request.
- D3 - closest facility to which any patient is designated to go.
- D4 - as far to the rear as required by any patient.
- D5 - support facility required by patient with highest priority.

Rules that govern which patients are unloaded from an evacuation vehicle at a vehicle destination.

- U1 - none.
- U2 - all.
- U3 - those patients designated for evacuation to this facility, either by the user (patient class) or by the model (patients evacuated from the next lower level).
- U4 - designated priorities.

Users may also want to force certain procedural policies upon the system, and these may in turn restrict the employment of evacuation vehicles. Such restrictions may include the following:

1. Restrict the type of evacuation vehicle to be employed at each facility level, e.g., only ground ambulances at the FEBA.

2. Restrict the destinations that can be reached directly from each facility level.
3. Restrict the patient priorities that can use each type of evacuation vehicle.
4. Specify that patients with certain priorities must be evacuated to a specified user-selected facility.
5. Specify that a particular patient class must be evacuated to a specific user-selected facility.

There is no conflict between these restrictions and the rules which the user may select for the employment of the evacuation vehicles. Any of these restrictions can be included in the model by selecting the appropriate vehicle employment rule or by the user option of designating the number and type of vehicles assigned to each facility level.

The NAMES II logic which governs the procedures for requesting an evacuation vehicle is described in Figure 3. The REQUEST EVAC logic of Figure 3, together with the VEHICLE ARRIVAL logic (Figure 4) for loading, unloading and dispatching vehicles are incorporated in NAMES II and must be understood by the user to avoid conflicts with the user-selected rules for the employment of evacuation vehicles. The REQUEST EVAC routine is summoned by the model whenever

1. a patient enters an evacuation queue,
2. a patient's waiting time in the evacuation queue exceeds an interval, specified by the user, which is called the patient's evacuation threshold time,
3. A vehicle departs from a facility with patients still waiting in the evacuation queue.

Each patient, according to the priority assigned to his class, is assigned an evacuation threshold time by the user. As soon as his waiting time in an evacuation queue reaches his assigned threshold time, an evacuation vehicle is requested. In the current NAMES II Model, this threshold time must be zero for urgent (Priority 1) patients, but the user may select the threshold times for patients having other priorities. As Figure 3 indicates, a helicopter is always requested first for an urgent patient, and if a helicopter is not available, a ground vehicle (ambulance) is requested. A helicopter is also the first choice for Priority 2 patients, but if no Priority 1 or Priority 2 patients are waiting, only ambulances are requested. Figure 3 also shows how the number of patients or spaces waiting to be evacuated "triggers" requests for air or ground vehicles. The air and ground "trigger" spaces are specified by the user. It is always assumed that an ambulatory patient occupies one space on an evacuation vehicle; a litter patient occupies two spaces.

REQUEST EVAC
AT A
FACILITY UNIT

EXAMINE THE
PATIENTS IN THE
EVACUATION QUEUE
OF THIS UNIT

HAVE ALL
PATIENTS BEEN
EXAMINED?

ANY URGENT
PATIENTS FOUND
(PR 1)?

DIED
IN
EVAC Q

IS PATIENT
DEAD?

COUNT NUMBER
OF PATIENTS BY
PRIORITY

COUNT NUMBER
OF SPACES BY
PRIORITY

IS GROUND
VEHICLE
ENROUTE?

ANY
IMMEDIATES?
(PR 2)?

COUNT
REQUI
PR 2.3

COUNT SPACES
REQUIRED BY
PR 3 AND 4

DO SPACES
EXCEED GROUND
TRIGGER?

SEND
GROUND

TRY
AIR

IS IT
DAYLIGHT?

SUMMON
(AIR)

WAS AIR
VEHICLE
DISPATCHED?

END

DO SPACES
EXCEED GROUND
TRIGGER?

END

SEND
GROUND

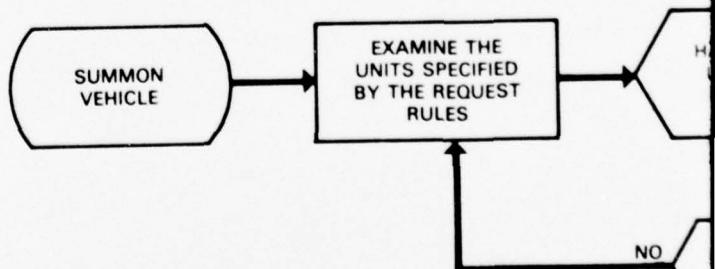
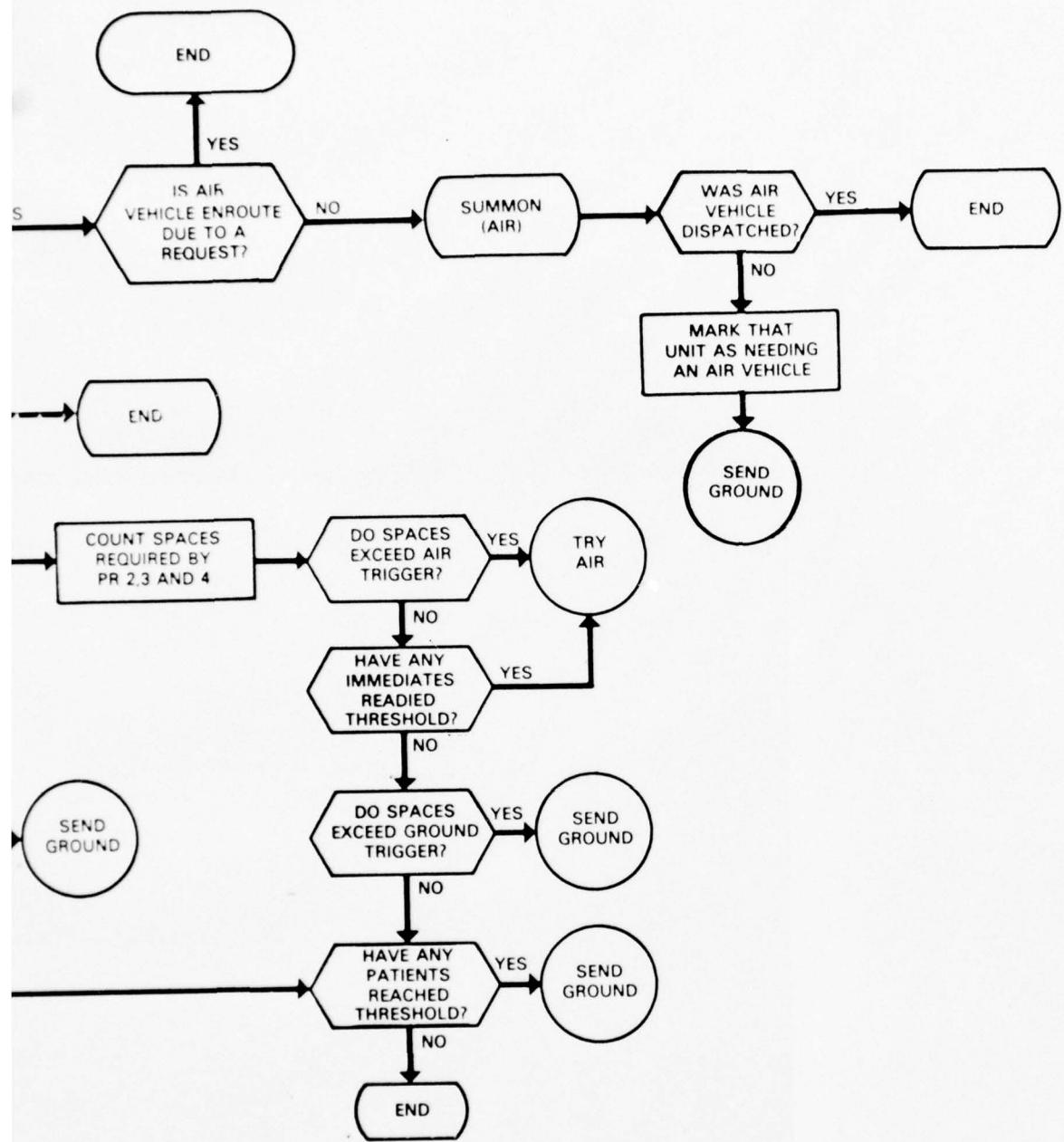
IS GROUND
VEHICLE
ENROUTE?

END

SUMMON
(GROUND)

V

2



EVACUATION QUOTE
OF THIS UNIT

EXAMINED?

(PR 1)?

DIED
IN
EVAC Q

IS PATIENT
DEAD?

COUNT NUMBER
OF PATIENTS BY
PRIORITY

COUNT NUMBER
OF SPACES BY
PRIORITY

IS GROUND
VEHICLE
ENROUTE?

ANY
IMMEDIATES?
(PR 2)

COUNT SPACES
REQUIRED BY
PR 3 AND 4

DO SPACES
EXCEED GROUND
TRIGGER?

NO

TRY
AIR

SIT
DAYLIGHT?

SUMMON
(AIR)

WAS AIR
VEHICLE
DISPATCHED?

YES → END

DO SPACES
EXCEED GROUND
TRIGGER?

NO → END

SEND
GROUND

IS GROUND
VEHICLE
ENROUTE?

YES → END

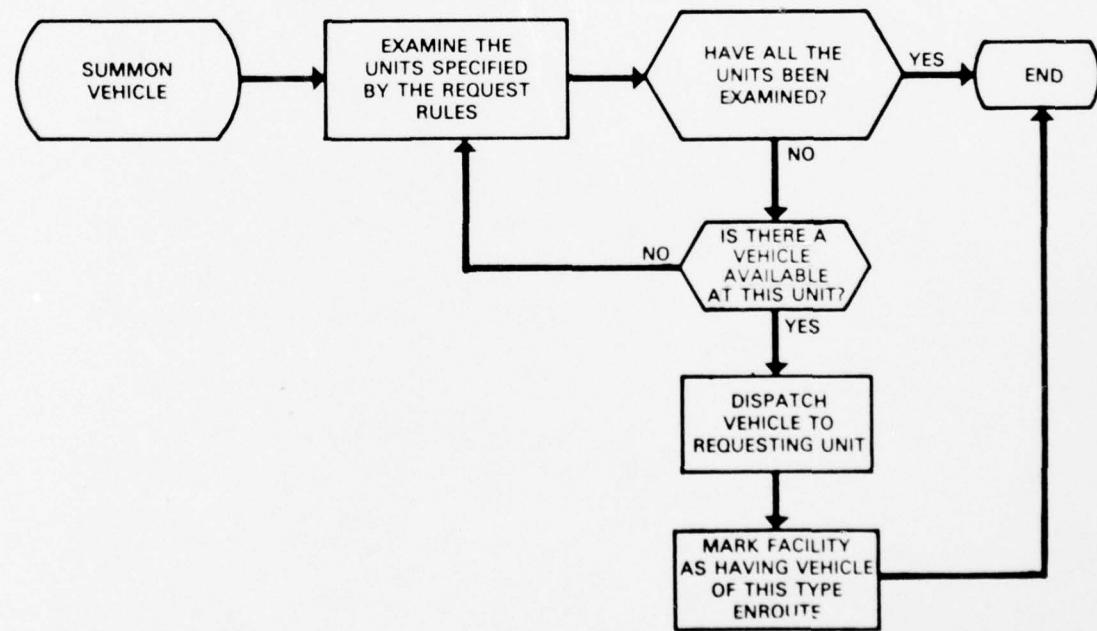
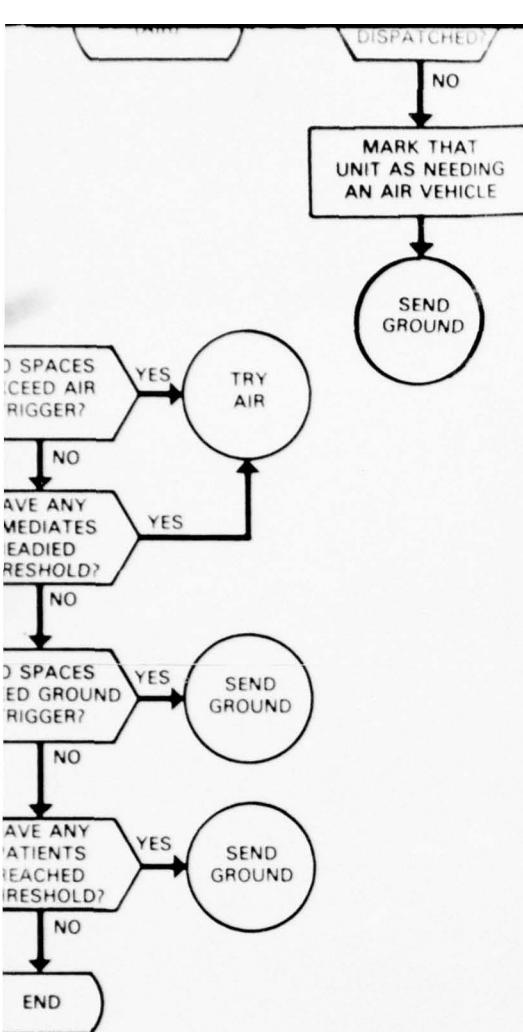
SUMMON
(GROUND)

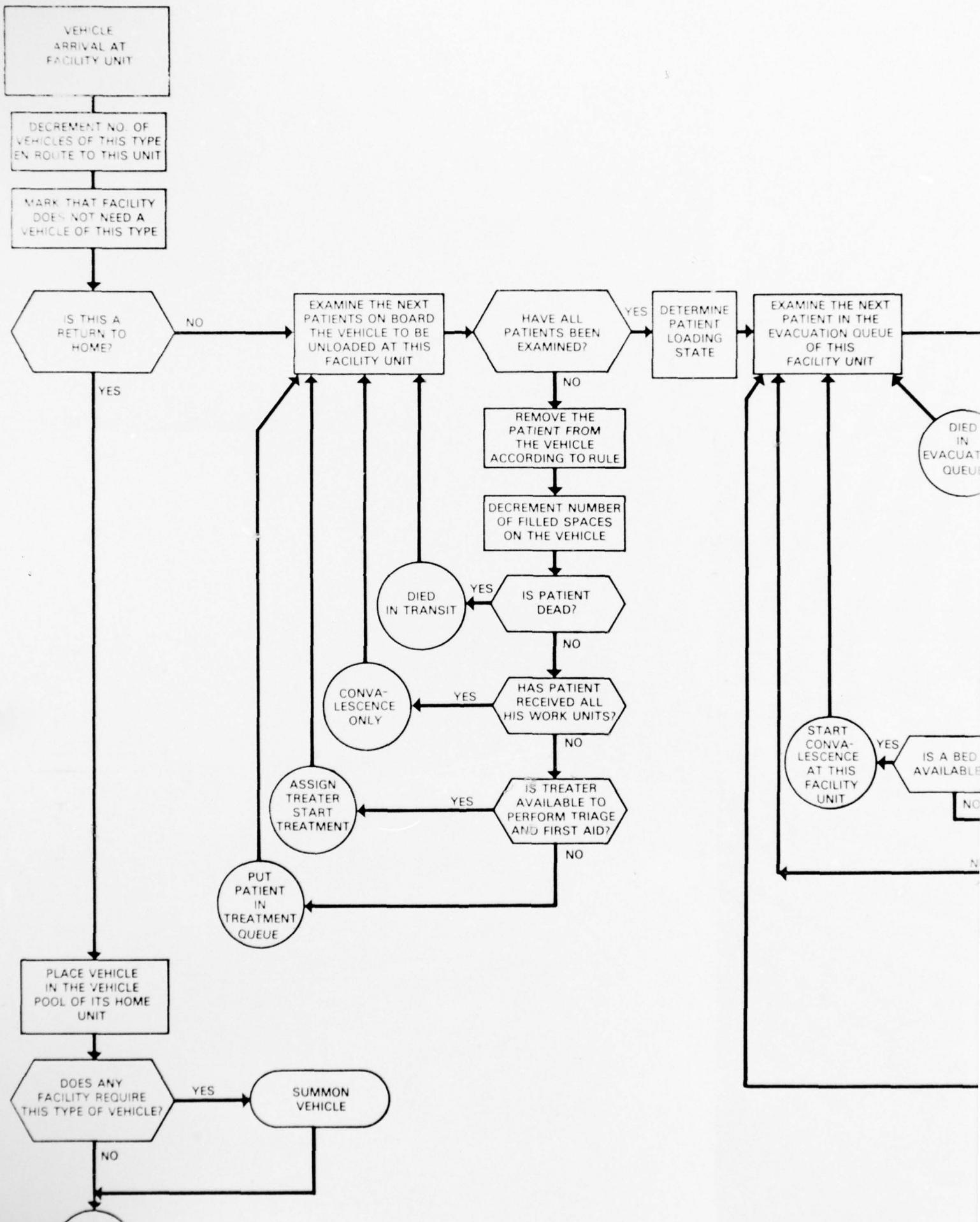
WAS GROUND
VEHICLE
DISPATCHED?

YES → END

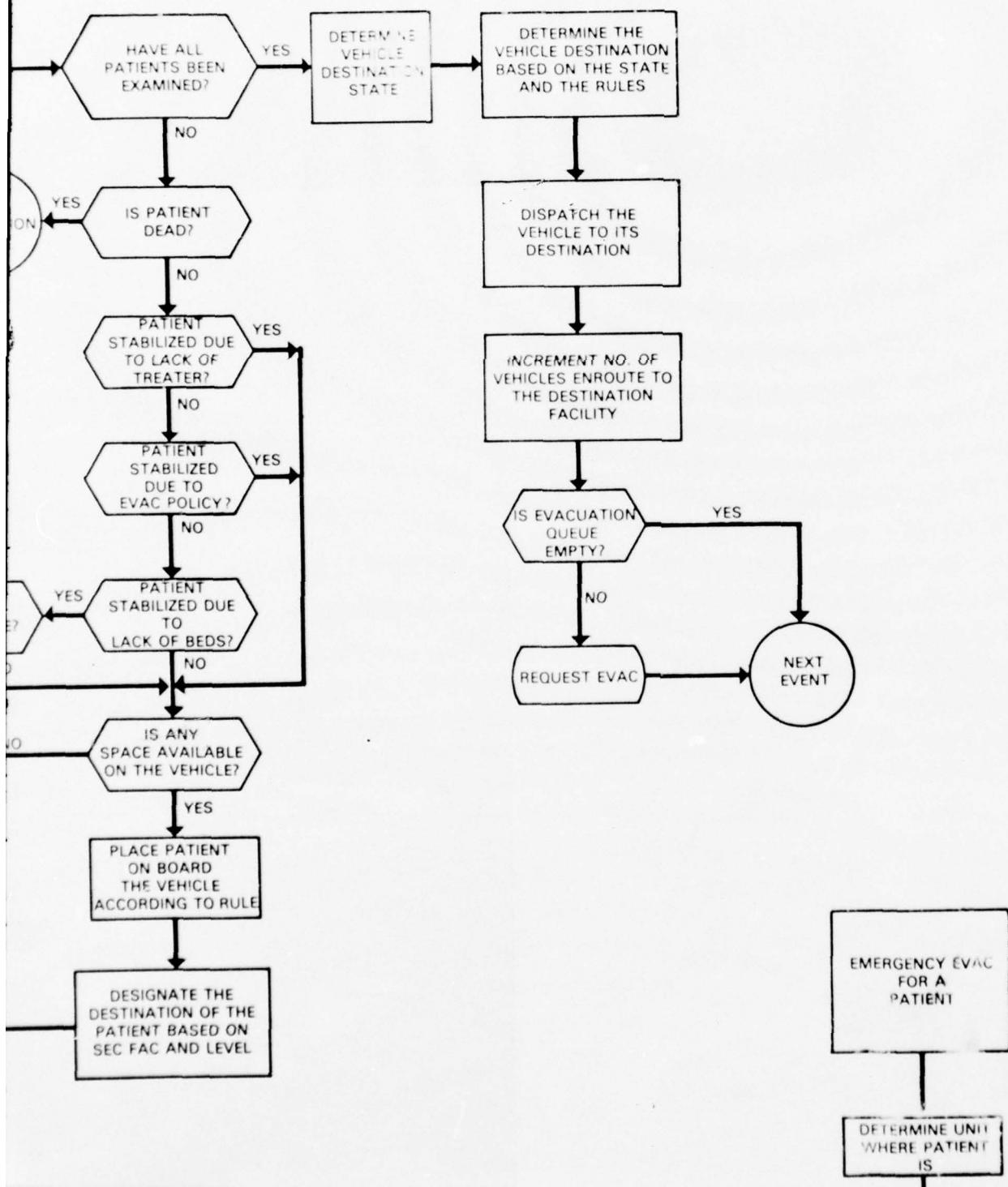
MARK THAT
FACILITY NEEDS
A GROUND VEHICLE

~





2



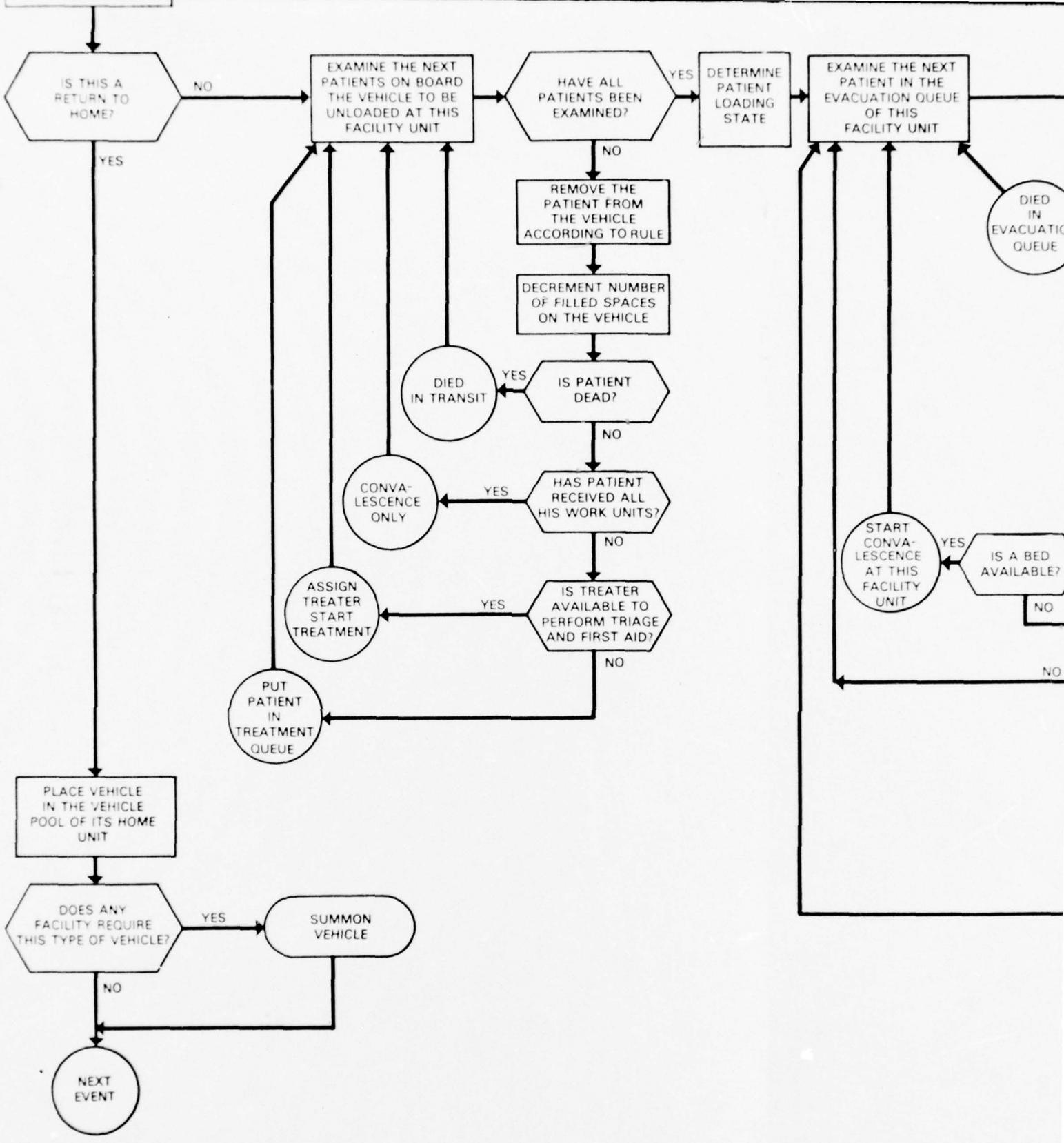
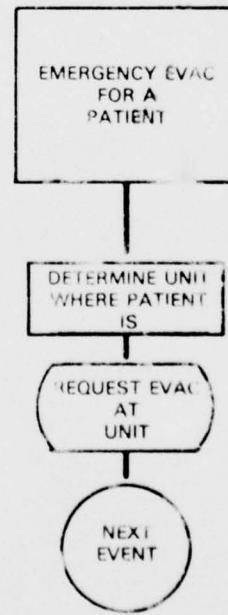
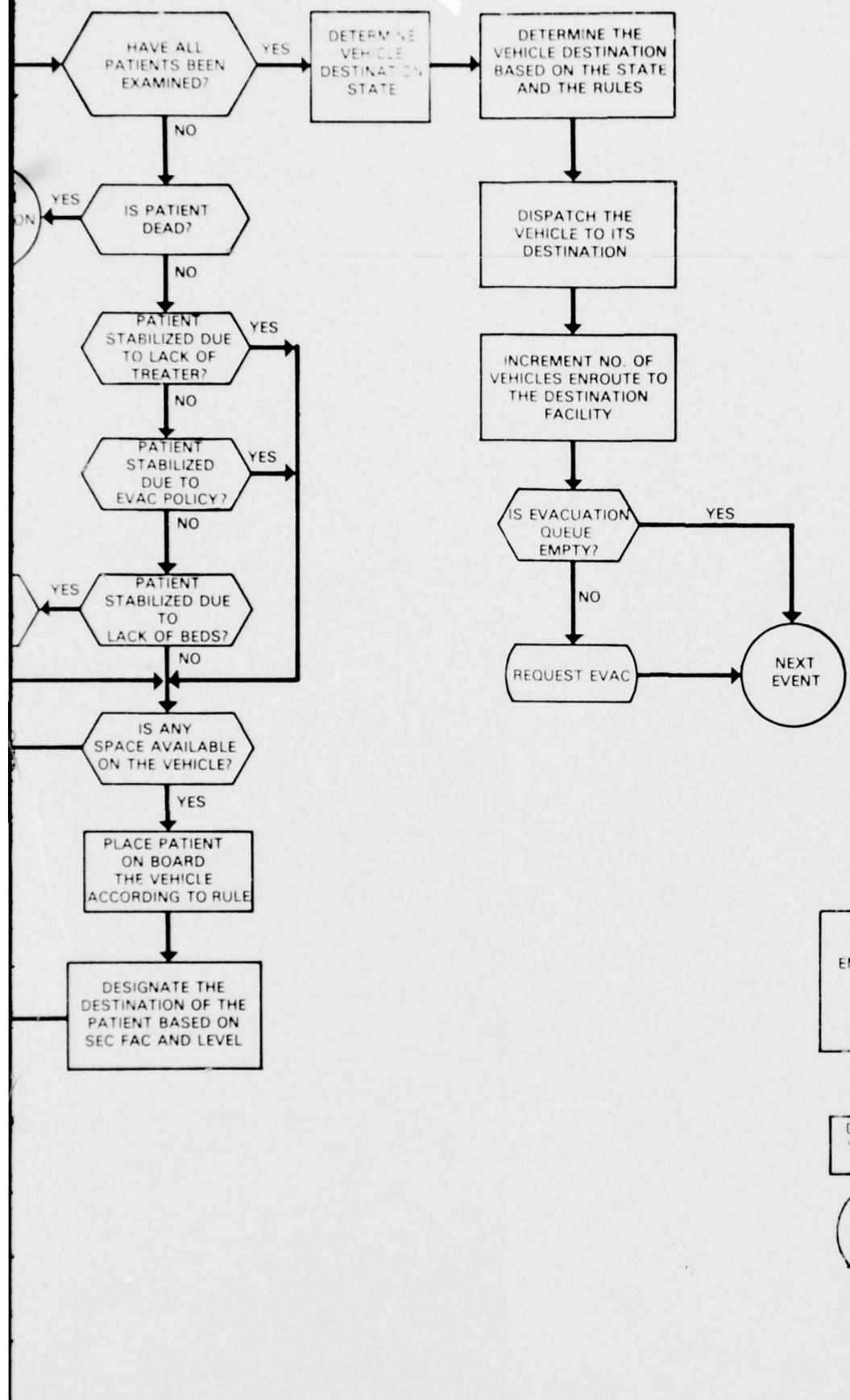


Fig. 4 — Logic for loading, unloading and dispatch



using evacuation vehicles

The NAMES II Model incorporates a feature that enables all patients awaiting evacuation to receive additional medical attention if transportation is delayed, provided appropriate treaters are assigned to the facility. In addition to the evacuation threshold times which trigger a request for a vehicle to pick up patients if they have been waiting too long, all patients (including outpatients) are assigned an "additional treatment" threshold time. If this time is exceeded before a vehicle has been dispatched to the waiting patient's facility, the patient will leave the evacuation queue and undergo additional treatment, provided the appropriate treater is assigned to the facility. Otherwise the patient is left to wait for the arrival of the vehicle. If he dies while awaiting transportation, he is not placed in the vehicle but is counted as having died at this facility. If he is alive when the vehicle arrives, but dies in transit, he is counted as having died enroute to his next receiving facility.

NAMES II also contains an added feature which helps reduce the number of patients evacuated because of convalescent bed shortages. Whenever a patient is returned to duty from a facility's convalescent ward, making a bed available, the facility's evacuation queue is searched for patients who are there because of the shortage of convalescent beds. Amongst such patients, the highest priority patient is removed from the evacuation queue and transferred to the empty convalescent bed. He will subsequently be returned to duty, instead of being evacuated from the facility. If the evacuation queue contains no patients who are being evacuated because of the bed shortage, a search is next made for patients who are being stabilized because of the convalescent bed shortage at the facility. If there are any such patients, the one who is due to leave stabilization next (to enter the evacuation queue) is immediately transferred to the empty convalescent bed, and will subsequently be returned to duty. Other rules could be adopted for removing such patients from stabilization or from the evacuation queue, such as selecting the patient with the shortest convalescent time.

When a patient is evacuated from any facility, his destination is designated to be his user-selected second facility if his present facility is closer to the FEBA than his second facility. Otherwise, his destination is designated to be the next facility to the rear. Depending on the vehicle destination rules in force, the vehicle which is evacuating the patient may or may not stop next at the patient's designated destination, and, depending on the patient unloading rules in force, the patient may or may not be unloaded at the vehicle's next stop. Wherever the patient is unloaded next, he will remain until he dies, or returns to duty, or until one of the three conditions is met to force his stabilization and evacuation.

The vehicle destination rules and the patient unloading rules always prevail over the patient's designated destination. If the patient is unloaded at a facility closer to the FEBA than his designated destination, his next designated destination, if he has to be evacuated again, will be the same as it was before, that is, to his second facility if he hasn't already been there, or else to the next facility to the rear. If he is

unloaded at his designated destination or at a facility further to the rear than his designated destination, then his next designated destination, if he has to be evacuated, will be the next facility to the rear.

In the NAMES II Model, it is assumed that patients who are evacuated from the facility level furthest from the FEBA will be transferred to staging facilities for air evacuation out of the combat zone. These staging facilities are not currently included in the evacuation chain simulated by the model; hence, evacuees from the last facility level are removed from the simulation once they enter the evacuation queue at that facility. They are never placed on board any of the evacuation vehicles which service the simulated evacuation chain.

NAMES II INPUTS

The Model is "driven" by many user-specified parameters, or inputs, which describe the principal elements of the medical evacuation system. These inputs, which are listed below, are not dependent upon historical data. If the user wishes to use the model to simulate historical situations, then certain inputs, such as the average number of patients admitted each day, could be provided from historical data.

Instructions for the correct preparation of these inputs are contained in Appendix B, together with illustrative examples from the NAMES II baseline simulation. All of the baseline simulation input parameters are described in Appendix A, and all of the computer reports of the baseline simulation inputs are contained in Appendix C.

Operational (Tactical) Inputs

- Distances between the FEBA and each medical facility level, including the evacuation vehicle pool
- Average number of battle casualties each day -- inpatients and outpatients
- Proportional distribution of battle casualty arrivals for each hour of the day -- inpatients and outpatients
- Proportional distribution of battle casualties entering the evacuation chain at each facility level -- inpatients and outpatients
- Proportional distribution of battle casualties among the patient classes -- inpatients and outpatients
- Number of combat days
- Hours of dawn and dusk

Physical Resources Inputs

- Number of medical facility levels
- Number of medical facility units at each level
- Types of medical personnel (treaters) assigned to each facility unit, together with the numbers of each type assigned
- Quantities of evacuation vehicles, by type, assigned to each facility unit, including the pool, together with the vehicle capacities, by

- type (one space for an ambulatory patient, two spaces for a litter patient)
- Speed of evacuation vehicles, by type, between each medical facility level
- Convalescent bed capacity at each facility unit.

Medical Technology Inputs

- Patient class descriptions
- Work unit descriptions
- For each patient class:
 - priority
 - mobility factor (probability that the patient will be ambulatory)
 - mortality threshold time at patient's entry facility
 - critical mortality work unit allowable delay time
 - critical convalescent work unit allowable delay time
 - sequence of work units to be performed, listed in order of treatment
 - first-aid work unit
 - critical mortality work unit
 - critical convalescent work unit
 - convalescent time probability distribution
- For each work unit:
 - preferred and alternate treaters and respective treatment times
- For each patient priority:
 - stabilization time prior to evacuation
 - evacuation threshold time
 - additional treatment threshold time
- Factor by which patient's original convalescent time is increased if his critical convalescent work unit is not completed in the allowable delay time.

Command and Control Inputs

- Number of non-urgent casualties in an evacuation queue that triggers a request for each type of evacuation vehicle
- Evacuation policy for each facility unit
- The patient's second facility level (SECFAC) following evacuation from his entry facility
- Rules for the employment of evacuation vehicles at each facility level:
 - levels from which vehicles, by type, are requested
 - patients unloaded from arriving vehicles, by vehicle type
 - patients loaded on departing vehicles, by vehicle type and state, i.e., vehicle empty or not, and other vehicle enroute or not
 - departing vehicles' destinations, by vehicle type and state, i.e., vehicle empty or not

NAMES II OUTPUTS

The NAMES II Model computes and prints daily and cumulative statistics at intervals desired by the user, together with summary statistics following the last day of combat and again after all patients have left the system. This output data, which is listed below, provides the model user with a quantitative method of observing various measures of the effectiveness of specific medical evacuation systems. This permits the relative comparison of different evacuation systems, and also shows the sensitivity of an evacuation system to the various design parameters or inputs. The output data includes patient dispositions, measures of lost time due to injuries and illness, measures of resource requirements, and measures of resource utilization. Appendix D contains sample computer reports of the NAMES II baseline simulation outputs.

Daily and Cumulative Reports

- Numbers of casualties, listed by facility level and patient priority, who
 - entered that level directly,
 - were evacuated to that level,
 - returned to duty without convalescence,
 - returned to duty with convalescence,
 - died during treatment,
 - died in a treatment queue,
 - died in an evacuation queue,
 - died enroute (in transit) to that facility level,
 - remained at that level at midnight,
 - remained in stabilization at that level at midnight,
 - remained in convalescence at that level at midnight,
 - entered convalescence,
 - had their convalescent time increased,
 - were stabilized because a required treater was not assigned,
 - were stabilized because their convalescent time exceeded the evacuation policy,
 - were stabilized because of the shortage of beds,
 - were evacuated from that facility level.
- Numbers of inpatients and outpatients, listed by facility level and work units, who required each work unit; the number of times preferred or alternate treaters for each work unit were assigned to the facility when first requested; the number of times preferred or alternate treaters for each work unit were available when first requested; and the number of patient deaths due to excessive delays in receiving each critical mortality work unit.
- Numbers of patients, listed by facility level and convalescent times, who
 - required beds,
 - entered stabilization or were evacuated because required treaters were not assigned, or their convalescent time exceeded the facility evacuation policy, or because of the shortage of beds,
 - remained in stabilization at midnight,

- entered convalescence,
- arrived for convalescence only,
- remained in convalescence at midnight.
- Number of round trips completed by each evacuation vehicle which was assigned to each facility unit, including the pool; the length of time each vehicle was in use; the average trip time for each vehicle; the daily average occupancy (number of patients) of each vehicle; and the average occupancy of each vehicle taken over all time to date.
- Number of requests made by each facility level for each type of evacuation vehicle, and the number of such requests which were honored (vehicle dispatched).
- Number of requests placed on each facility level and the pool for each type of evacuation vehicle, and the number of such requests which were honored (vehicle dispatched).
- Number of pick-up trips made by each type of evacuation vehicle to each facility level in response to requests made by that facility level. Vehicles always arrive at the requesting facility empty on pick-up trips.
- Number of stops made by each type of evacuation vehicle at each facility level for reasons other than to comply with pick-up requests. These stops "enroute" are of two classes only: patient unloading stops, with possible reloading; and stops which mark the vehicle's return to its home facility.

Summary Reports

- Exact number of inpatient arrivals and outpatient arrivals into the evacuation system during each hour of each day of combat.
- Total numbers of inpatients and outpatients, listed by facility level and work units, who required each work unit; the number of times preferred or alternate treaters for each work unit were assigned to the facility when first requested; the number of times preferred or alternate treaters for each work unit were available when first requested; and the numbers of patient deaths due to excessive delays in receiving each critical mortality work unit.
- Total numbers of patients, listed by facility level and convalescent times, who
 - required beds,
 - entered stabilization or were evacuated because required treaters were not assigned, or their convalescent time exceeded the facility evacuation policy, or because of the shortage of beds,
 - remained in stabilization at midnight,
 - entered convalescence,
 - arrived for convalescence only,
 - remained in convalescence at midnight.
- Numbers of patients, listed by facility level for each day following D-Day (beginning of combat), who
 - were admitted to the facility level, either by direct entry or by evacuation from another level,
 - entered stabilization or were evacuated because required treaters were not assigned, or their convalescent time exceeded the

- facility evacuation policy, or because of the shortage of beds,
- entered convalescence,
- arrived for convalescence only,
- had their convalescent time increased,
- remained in stabilization at midnight,
- remained in convalescence at midnight.
- Numbers of beds required, occupied, and assigned to each facility level for each day following D-day.
- Number of beds required outside the combat zone for each day following D-day.
- Numbers of patients, listed by facility level for each day following D-day, who
 - entered the facility level directly,
 - were evacuated to the facility level from another level,
 - returned to duty without convalescence,
 - returned to duty with convalescence,
 - died,
 - were evacuated,
 - remained at that level at midnight.
- Total numbers of inpatients and outpatients, listed by patient class, who
 - entered the evacuation system,
 - returned to duty,
 - were evacuated out of the combat zone,
 - died.
- Total numbers of patients, listed by number of days spent in the evacuation system, who
 - returned to duty,
 - died,
 - were evacuated out of the combat zone.

NAMES II BASELINE SIMULATION

The medical treatment and evacuation system simulation used as the baseline for comparative analysis was designed to represent a system which might support a U.S. Marine Corps combat division. While NAMES II inputs are not dependent upon historical data, many of the baseline simulation inputs conform to actual information obtained from the Army, Navy and Marine Corps. This was done in order to test the capability of NAMES II to produce realistic results when simulating realistic conditions. Table A-1 of Appendix A* shows the average daily number of battle casualties (inpatients) used in the baseline simulation. These battle casualties represent actual Marine Corps casualties of the Korean Chosin Reservoir Campaign in 1950. In addition to these inpatients, the number of outpatients per day was assumed to be constant at 150 throughout the 15-day conflict. Thus the total patient load thrust upon the baseline system during the 15-day combat period was in excess of 5000.

The configuration of the baseline system is illustrated in Figure 5. There are 360 medics supporting the combat forces at the FEBA; 10 medics

* Tables A-1 through A-9 and Figures A-1 and A-2 appear in Appendix A.

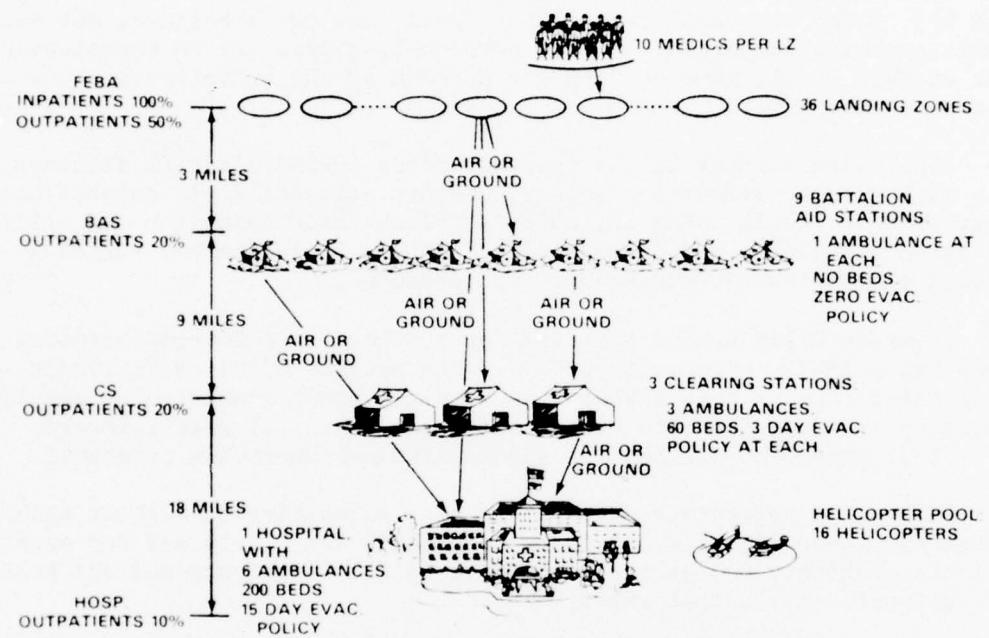


Fig. 5 — NAMES II baseline simulation operational area,
showing possible evacuation routes

are assigned to each of 36 evacuation terminals or landing zones (LZ). All of the inpatients and 50 percent of the outpatients enter the system at this level. All of these inpatients who survive their initial treatment are evacuated to the rear for additional treatment. The outpatients who enter the system at the FEBA return to duty after receiving first aid; none of them die.

Three miles behind the FEBA are nine battalion aid stations (BAS). Each BAS, which services four landing zones, has one ambulance, and two physicians with supporting medical personnel. There are no convalescent beds at this level, however. Twenty percent of the outpatients enter the system at this level.

Nine miles further to the rear are three 60-bed clearing stations (CS), each with a 3-day evacuation policy. Twenty percent of all outpatients enter at this level. Each CS, which services three battalion aid stations, has three ambulances and 44 medical personnel, including two surgeons, two general practitioners, and supporting personnel.

Eighteen miles behind the clearing stations is a 200-bed hospital which has a 15-day evacuation policy. Ten percent of all outpatients enter the system at this level. The hospital has six ambulances and 131 medical personnel, including two surgeons, six general practitioners, five other physician and dentist specialists and supporting personnel.

The hourly percentage distributions of casualties throughout each combat day, shown in Figure A-1 for inpatients and Figure A-2 for outpatients, indicate two peak arrival periods for inpatients and one peak arrival period for outpatients.

Each patient was assigned to one of 75 classes, which were defined by the U.S. Army Academy of Health Sciences, [2] and correspond to diagnostic codes defined in the U.S. Department of Defense Disease and Injury Codes. These patient classes encompass those wounded in action (WIA's) as well as diseased and non-battle injury (DNBI) patients, and also include outpatients as well as inpatients. The proportional distributions of patients among the 75 classes is shown in Table A-2. This data came from Army and Navy Vietnam records. The descriptions of these patient classes are contained in Table A-4. Treatment parameters for each patient class are described in Table A-5. The patient priority assigned to each class, and the litter or ambulatory status of each class, were obtained from the U.S. Army Academy of Health Sciences. [3] Other inputs which somewhat resemble data prepared by the Academy of Health Sciences and used in the U.S. Army Medical Planning Factors Study (MEDPLN) [3] are the treater descriptions (Table A-3), the work unit descriptions (Table A-6), and the treaters and treatment times associated with the work units (Table A-7). The MEDPLN Study, however, did not include such definitive care work units as major debridement or surgery, nor did it consider the NAMES II concepts of first-aid work units, critical mortality work units, critical convalescent work units, allowable delay times to complete these work units, and mortality threshold times at the patient's entry facility.

Therefore, the NAMES II baseline simulation work units (Table A-6) and associated treaters (Table A-7) cover a more complete patient treatment capability, which is reflected in the sequences of work units designated for each patient class (Table A-5) in the NAMES II baseline simulation. The critical treatment threshold times and work units for the baseline simulation are listed in Table A-8. The treater descriptions and assignments (Table A-3) conform to U.S. Navy standards, and each patient's second facility level (SECFAC) following evacuation from his entry facility is listed in Table A-9. These represent the closest facilities to the FEBA at which appropriate treaters are assigned to perform all work units required by the respective patient classes. By specifying each patient's SECFAC this way, no patient will be designated to go further to the rear than necessary for treatment. Other criteria could have been used in designating the SECFAC facilities chosen for the baseline simulation.

The convalescent time cumulative probability distribution associated with each patient class was based on U.S. Army Vietnam data, and is contained in Appendix C. Each patient's convalescent time is doubled, in the baseline simulation, if his critical convalescent work unit is not completed in the allowable delay time specified in Table A-8.

Additional medical technology inputs, indirectly linked to patient class via priority, are the times a patient spends in stabilization prior to evacuation to a higher facility, and the maximum times that patients are allowed to wait in an evacuation queue before requesting a special evacuation vehicle or receiving additional treatment. In the baseline simulation, stabilization times were 24 and 12 hours for urgent and immediate patients, respectively, and 0 hours for routine patients and outpatients. Threshold times for evacuation were 0 and 1 hour for urgent and immediate patients, respectively, and 24 hours for routine patients and outpatients. Analogous times for additional treatment were 20 minutes, 1 hour and 20 minutes, and 24 hours and 20 minutes, respectively.

Within the evacuation chain of the baseline simulation, ambulances (capacity: 8 spaces; speed: 25 mph) are requested from the closest support facility that has any available, including the requesting facility itself. Helicopters are provided only by a central pool, adjacent to the hospital, which contains 16 helicopters (capacity: 24 spaces; speed: 100 mph). The NAMES II Model logic requires that a helicopter be requested when a single urgent patient enters a facility's evacuation queue, unless a helicopter is already enroute to the facility in response to an earlier request for a helicopter. If a helicopter is not available to respond to such a request, a ground vehicle (ambulance) is immediately requested unless an ambulance is enroute to the facility in response to an earlier request for an ambulance. For non-urgent patients, the number of patient spaces (one required for an ambulatory patient, two required for a litter patient) in an evacuation queue that are necessary to trigger a request for a helicopter is six, and for an ambulance it is two. Helicopters are always dispatched at any time, day and night, to pick up Priority 1 (urgent) patients in the NAMES II Model; for all other patients, helicopters respond only in daylight, which was prescribed, in the baseline

simulation, to be the period from 6 a.m. to 6 p.m. (0600 to 1800). Helicopters are always the model's preferred mode of travel in the evacuation chain for Priority 1 and Priority 2 patients; however, in the baseline simulation, all patients are evacuated from the FEBA, battalion aid stations and clearing stations by whichever kind of vehicle arrives first, whether it be helicopter or ambulance. Patients are put aboard the vehicle by priority, and it then proceeds to the closest facility to which any patient on board is designated to go, either by the user (patient class) or by the model (patient evacuated from the next lower level). At each stop, only those patients designated for evacuation to that facility are unloaded. The evacuation vehicle then takes on board, by priority, all who will fit and proceeds again to the closest facility to which any patient is designated to go. This procedure, together with the patient flow rules contained in the NAMES II Model, forces evacuation vehicles in the baseline simulation to proceed always in a direction away from the FEBA. Each vehicle returns home when it unloads its last patient and there are no further patients waiting to be evacuated.

Appendix C contains computer reports of all inputs used in the baseline simulation. Daily and cumulative statistics were printed each day of the 15-day combat period. Summary statistics were printed after the 15th day, and again 15 days later, at which time no patients remained in the evacuation system. (The last patient entered the system on the 15th day, and the hospital evacuation policy was 15 days). Appendix D contains sample computer reports of the baseline simulation outputs.

RESULTS

The NAMES II outputs which will be of greatest interest to a user will depend on his objectives for using the model. However, the value of the information which the user will get out of the model will depend considerably on the sensitivity of certain model outputs to changes in model inputs which describe the medical evacuation systems the user is studying. It is possible for some inputs to dominate results to such an extent that other inputs have little effect on model results (just as in real life), and if the user does not understand what is happening, he may draw wrong conclusions about the importance of these inputs in general.

For example, if the patient "mix" is such that a great many patients have critical mortality work units and the allowable delay time for receiving these work units is very short, then the mortality rate might be very high despite significant changes in the number and speed of evacuation vehicles and the number of medical personnel assigned to the facilities. Simulations with such a patient "mix" will show few requirements for resources such as convalescent beds. By the same token, if only a very small number of patients have critical mortality work units and the allowable delay time for receiving them is very long, then the mortality rate may be very low despite significant changes in the types and numbers of medical personnel assigned to facilities. Under these circumstances, more types of treaters at a facility will have the result that fewer patients are evacuated from the facility and more are returned to duty.

NAMES II prints reports describing all user inputs for each simulation, and the user should examine these reports to detect inputs which may cause certain model outputs to be insensitive to changes in other inputs.

A total of 5706 patients, of whom 3595 were inpatients and 2111 were outpatients, entered the simulated evacuation system in the NAMES II baseline simulation. The patient "mix" and the associated work units were such that about 9% of all patients required immediate emergency first aid in order to survive (patients designated as having a mortality threshold time); 63% of all patients would die if they did not receive specified critical mortality work units in time, but in all these cases, it was possible to save the patients if evacuation procedures and resources were adequate. Thus the mortality rate was very sensitive to changes in treater assignments, evacuation vehicle availability, and medical regulating procedures. The patients who had critical mortality work units also had first aid work units to assure that they would not be evacuated before it was medically safe, provided necessary treaters were assigned to their facility. The 37% of all patients who had no critical mortality work units also had no first aid work units, since they all had lesser injuries or illnesses. However, 96% of all patients had critical convalescent work units, which meant that their convalescent times would be doubled due to complications if designated work units were not administered in time. This made the number of patients who returned to duty more sensitive to factors which affected the speed of their medical care, such as remaining time in queues, vehicle speeds, and treater availability, as well as to the evacuation policies employed at the various facilities.

Using the baseline simulation configuration, resources and procedures as a standard for comparison, many other simulated evacuation systems have been examined. All the systems discussed here retained the patient loads, work units and other medical technology inputs used in the baseline simulation.

The three principal measures of patient dispositions -- the number returned to duty (RTD), the number evacuated from the combat zone (EVAC), and the number who died -- are shown in Figure 6 for the baseline simulation and six other simulations in which the number of treaters, the number of helicopters, the number of casualty receiving facilities and the evacuation vehicle employment rules were varied. These changes had their greatest impact on the mortality rate.

Increasing the number of surgical treaters from 8 to 12 at the hospital cut the mortality rate almost in half (from 4.0% to 2.3%), despite the fact that these treaters performed other functions in addition to surgery, notably triage. If there were no helicopters for medical evacuation, the mortalities rose sharply (to 13.8%). Additional simulations have demonstrated that the capacity of evacuation vehicles is relatively unimportant in the combat zone; what is vital to saving lives is that there be many high speed vehicles. The need for high speed, presently attainable only with helicopters, is obvious with a patient population

NAMES II
PATIENT DISPOSITIONS, EXPRESSED AS PERCENTAGES OF TOTAL NUMBER OF CASUALTIES
ENTERING SYSTEM DURING COMBAT PERIOD

COMPARISON SIMULATIONS	RETURNED TO DUTY	EVACUATED FROM COMBAT ZONE	DIED
BASELINE	57.5%	38.5%	4.0%
BASELINE WITH 12 SURGICAL TREATERS AT HOSPITAL, INSTEAD OF 8	57.7%	40.0%	2.3%
BASELINE WITH NO HELICOPTERS	55.4%	30.8%	13.8%
BASELINE WITH NO BATTALION AID STATIONS OR CLEARING STATIONS	48.4%	42.8%	8.8%
BASELINE EXCEPT THAT HELICOPTER DESTINATION IS THE SUPPORT FACILITY REQUIRED BY PATIENT WITH HIGHEST PRIORITY, INSTEAD OF CLOSEST FACILITY TO WHICH ANY PATIENT IS DESIGNATED TO GO	57.0%	37.1%	5.9%
BASELINE EXCEPT THAT ALL EVACUEES FROM FEBA GO BY AMBULANCE TO BATTALION AID STATION LEVEL. ONLY THOSE DESIGNATED FOR THAT LEVEL ARE UNLOADED THERE	55.6%	31.2%	13.2%
BASELINE EXCEPT THAT ALL EVACUEES FROM FEBA GO BY AMBULANCE TO BATTALION AID STATION LEVEL. THEY ARE ALL UNLOADED THERE AND REMAIN UNTIL THEY NEED A TREATER WHO IS NOT ASSIGNED OR UNTIL THEY RECEIVE THEIR FIRST AID WORK UNIT.	57.1%	36.5%	6.4%

Figure 6

containing a large number who will die if they don't receive quick medical attention. The reason why it is important to have many helicopters, but not necessarily large ones, is apparently because the casualties are spread out at any one time over the many landing zones and other facilities, and the availability of helicopters to respond to a medical evacuation request is therefore more important than the load each helicopter can carry. (This is generally true in civilian emergency medical situations also).

The gravity of large delays in transporting seriously wounded patients to treatment centers is further illustrated in Figure 7, where the percentage of mortalities among surgical patients at the combat zone hospital is plotted as a function of the ratio of surgical treaters to surgical patients at the hospital. While more research is needed in this area to determine the effect of other parameters that influence mortalities, the two curves shown in Figure 7, obtained from two simulations which differed only in that one (baseline) had 16 helicopters and the other had none, illustrate two very significant points. First, provided the delay time in transporting surgical patients to the hospital is not so great that the patients are practically dead on arrival, the mortality rate of surgical patients rises very sharply when the ratio of surgical treaters to surgical patients drops below some numerical value which is strongly affected by the delay time in reaching the hospital. Second, even with a favorable treater-to-patient ratio, a delay of approximately one hour in transporting surgical patients to the hospital may multiply the mortality rate by a factor between 5 and 10. For example, most surgical patients in the simulations under discussion are transported directly from the FEBA to the hospital, a distance of 30 miles. In the baseline simulation (lower curve of Figure 7), most of these patients go by helicopter, which makes the trip in 18 minutes. If there are no helicopters (upper curve), this trip takes 72 minutes by ambulance, or 54 minutes longer. From Figure 7 it can be seen that for a treater-to-patient ratio of .20 (1 treater for every 5 patients) the mortality rate of surgical patients rises from 2% to 10% when there are no helicopters. Even with a treater-to-patient ratio of .3 (1 treater for approximately 3 patients) the mortality rate increases from about 1% to over 6% when there are no helicopters. At treater-to-patient ratios below .20 the mortality rate among surgical patients becomes completely intolerable when there are no helicopters. These results indicate that there is clearly a need for finding feasible alternatives to helicopter medical evacuation.

Looking again at Figure 6, it is seen that the resources provided by the battalion aid stations (BAS) and clearing stations (CS) have considerable impact on the overall mortality rate and on the number of patients returned to duty. When these facilities were removed, the existing hospital resources -- treaters, ambulances and beds -- and the helicopter pool were not sufficient to cope with the increased load placed on them. As a result, more patients died at the FEBA while awaiting evacuation, and more patients died at the hospital, either in treatment or while waiting for treatment. The overall mortality rate in the combat zone rose from 4.0% (baseline) to 8.8%. Correspondingly, more patients had to

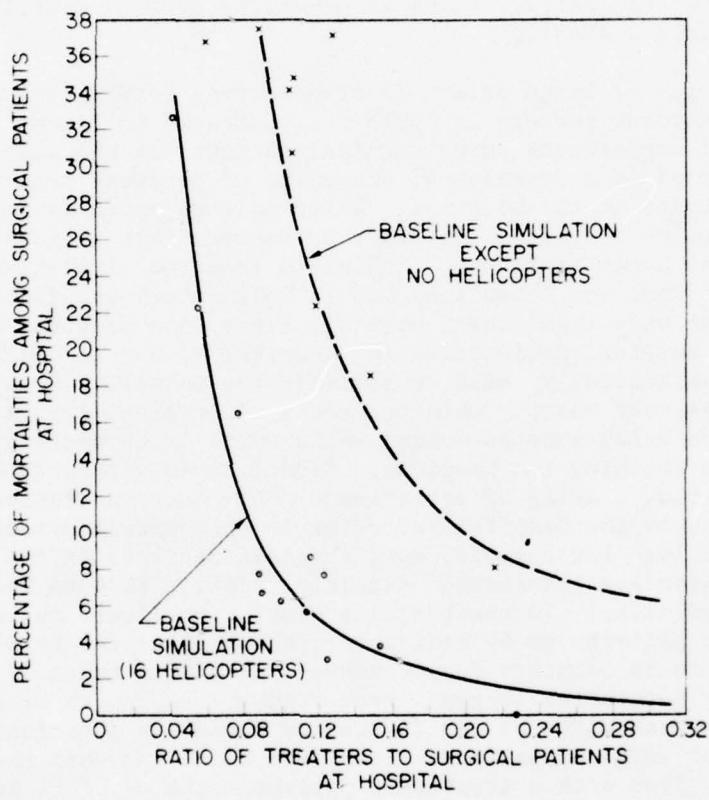


Fig. 7 — Variation of surgical patient mortalities at hospital with the number of assigned treaters

be evacuated from the hospital, and hence from the combat zone, because of the increased demand placed on the hospital's 200 convalescent beds, which were overtaxed even in the baseline simulation. With the removal of the battalion aid stations and clearing stations, the percentage of casualties evacuated from the combat zone rose from 38.5% (baseline) to 42.8%; the percentage of casualties returned to duty dropped from 57.5% (baseline) to 48.4%.

The significance of changes in medical regulating procedures, or procedures which govern the flow of patients through the evacuation system, is also shown in Figure 6.

The overall mortality rate rose from 4.0% to 5.9% simply by changing the rule governing the destination of helicopters such that when evacuating patients from a facility each helicopter went directly to the medical support facility required by the patient with highest priority, instead of going, as in the baseline simulation, to the closest facility to which any patient on board the helicopter was designated to go. This simple change in the employment of helicopters delayed the evacuation process and made the helicopters less available to respond to evacuation requests. Consequently, mortalities rose not only at the battalion aid stations and clearing stations, but primarily at the FEBA, where considerably more patients died while awaiting evacuation.

The mortality rate rose to 13.2% when the baseline simulation was modified to exclude helicopters from landing at the FEBA, while at the same time retaining all other baseline rules for the employment of evacuation vehicles. This meant that all evacuees from the FEBA (all of the inpatients) went by ambulance to the battalion aid station level, but only those designated for that level were unloaded and treated there. The rest remained in the ambulances until they reached their designated facility. As a result, ambulances were overtaxed, helicopters were under utilized, and the mortalities rose sharply, especially at the hospital because of the long trip time from the FEBA, and at the FEBA because of the long waiting time in the evacuation queues. This situation was improved considerably (mortality rate 6.4%) when all patients were unloaded from the ambulances at the BAS level and remained there for treatment until they needed a treater who was not assigned or until they had received their first-aid work unit, which meant they could be moved safely. In this case the heaviest mortalities occurred at the battalion aid stations (not enough treaters were assigned) and at the FEBA, again in the evacuation queues while waiting for ambulances to come. Treaters at the hospital were apparently idle a good deal of the time, compared to those at the battalion aid stations. Not one patient requiring major surgery died at the hospital throughout the combat period, while 178 such patients died at the battalion aid stations.

It is clear, from these two simulations in which helicopters were excluded from the FEBA, that the optimum medical regulating procedures for such a contingency will only be learned through additional research. In these simulations, the right types of treaters were assigned to the

battalion aid stations to render critical work units to most of the seriously wounded patients, but there were not enough treaters assigned. Under such circumstances, a limited number of treaters must render limited treatment to many patients, or full treatment to a limited number of patients. Further decisions must be incorporated into the NAMES II logic before these choices can be examined.

Additional simulations have demonstrated that the number of patients returned to duty is affected considerably by the convalescent bed capacity and the evacuation policies in force at each facility. The evacuation policy governs bed requirements, and both the bed requirements and the bed capacity govern bed occupancy, which is a measure of the number of casualties returned to duty. To determine convalescent bed requirements, the NAMES II Model records the number of patients who, upon receipt of all of their required work units, have convalescent times which do not exceed the evacuation policy at their facility. All of these patients will be allowed (by the evacuation policy) to recuperate at their facility and subsequently return to duty provided the bed capacity is sufficient. Consequently these patients establish the bed requirements at the facility. Clearly the convalescent bed occupancy cannot exceed either the convalescent bed capacity or the convalescent bed requirements. These last two factors are independent of each other. The upper curves of Figure 8 show that in the baseline simulation, the hospital convalescent bed requirements dictated by the 15-day evacuation policy overtake the 200 bed capacity prior to the second day of combat. The only way to increase the bed occupancy is to increase the bed capacity. Even if that cannot be done, however, a shorter evacuation policy would have the effect of returning more patients to duty, because it would result in a higher turnover rate in the convalescent ward. By contrast, the lower curves of Figure 8 show that the combined 180 bed capacity at the three clearing stations exceeds the requirements imposed by the 3-day evacuation policy. In this situation, a longer evacuation policy would make more efficient use of the bed capacity.

Several additional simulations were run to see the impact that changes in bed capacities and evacuation policies would have on bed requirements, bed occupancy and the number of casualties returned to duty. Curves showing daily bed requirements and occupancy for these simulations appear in Figures 9, 10, and 11. The most significant results, the number returned to duty following convalescence, are as follows:

COMPARISON SIMULATIONS		TOTAL NUMBER WHO ENTERED CONVALESCENCE DURING 15-DAY COMBAT PERIOD. (WILL RETURN TO DUTY)			
		CS	HOSP	CS LEVEL/HOSPITAL	TOTAL
<u>BASELINE SIMULATION</u>					
EVAC POLICY (DAYS)	3	15			
BEDS	60	200	451	569	1020 (28% of all inpatients)
<u>SIMULATION B</u>					
EVAC POLICY	6	15			
BEDS	60	200	662	553	1215 (35% of all inpatients)
<u>SIMULATION C</u>					
EVAC POLICY	6	10			
BEDS	60	200	6	641	1303 (37% of all inpatients)
<u>SIMULATION D</u>					
EVAC POLICY	6	15			
BEDS	60	400	662	988	1650 (47% of all inpatients)

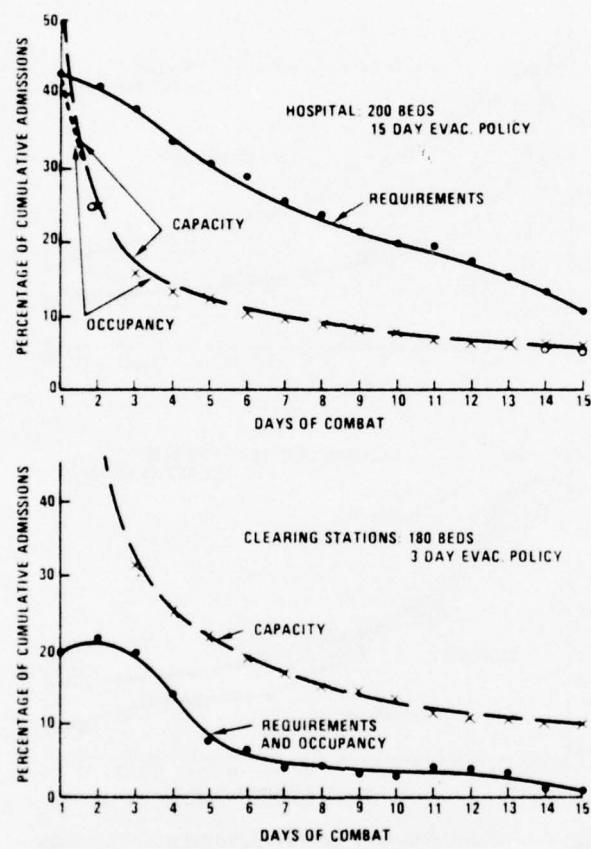


Fig. 8 — Baseline simulation convalescent bed requirements, capacity and occupancy

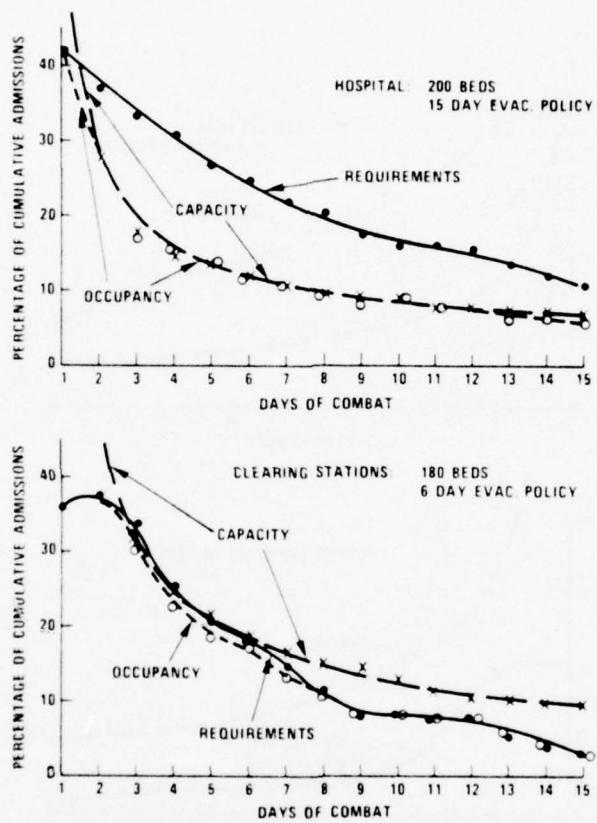


Fig. 9 — Convalescent bed requirements, capacity and occupancy, NAMES simulation B

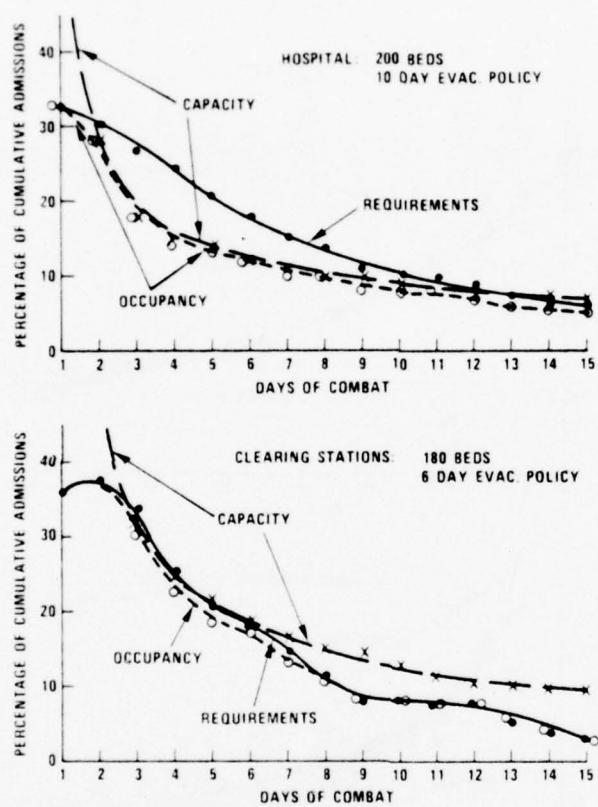


Fig. 10 — Convalescent bed requirements, capacity and occupancy, NAMES simulation C

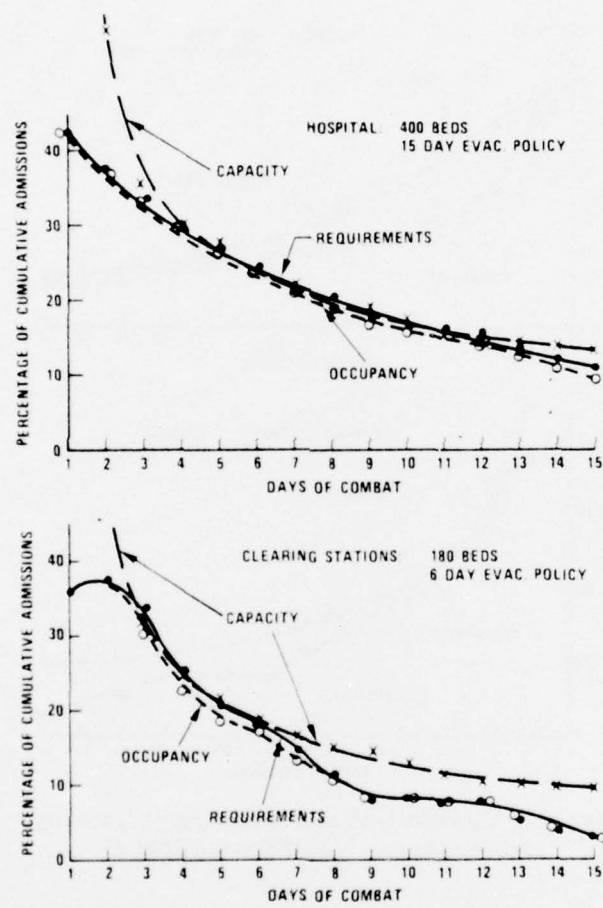


Fig. 11 — Convalescent bed requirements, capacity and occupancy, NAMES simulation D

These simulations demonstrate the effect of the evacuation policy when a facility is filled to capacity and when it is not. When the hospital is filled to capacity, as it is most of the time in all four simulations, a decrease in the evacuation policy (Simulation C), which causes a higher turnover rate, allows more patients to be admitted, with a resulting increase in the number returned to duty. Conversely, a longer evacuation policy under the same crowded conditions would result in fewer patients returning to duty. Obviously this would not be the result if the facility were not crowded, as is seen in Simulations B, C, and D, where a longer evacuation policy at the clearing stations, which are not crowded, permits more patients to enter convalescence and subsequently return to duty from those facilities.

Additional research is required to determine the most "efficient" evacuation system configurations, resources and procedures. Preliminary results suggest, for example, that a medical facility with fixed resources (beds) has an optimum evacuation policy which maximizes the number of patients returned to duty or minimizes the number evacuated (Figures 12 and 13). The effect of other parameters, such as the mortality rate, has yet to be investigated.

The NAMES Model also prints out useful information regarding patients who must be evacuated out of the combat zone. This information includes bed requirements as well as information which corresponds to patient "remaining factors" discussed in Beebe and DeBakey [4] and Army Field Manual FM 8-55. [5] Both the Army and the U.S. Marine Corps suggest that "remaining factors" be used to estimate hospital bed requirements, and have compiled historical data for this purpose. Figure 14 shows, however, that the patient remaining factors outside of the combat zone are very much related to the medical treatment facilities within the combat zone. Therefore, historical data should be used with caution.

Figure 14 shows patient remaining curves in hospitals outside the combat zone for the NAMES baseline simulation and also for NAMES Simulation D, which, as already indicated, is a much more efficient combat zone system than the baseline simulation system. In NAMES Simulation D, very few patients were evacuated from the combat zone because of bed shortages. This is indicated by the first section of the curve, which is almost horizontal for the duration of the combat zone hospital evacuation policy of 15 days.

On the other hand, the two curves of Figure 14 which were taken from Army FM 8-55 represent patient remaining factors for WIA's and DMBI's in North Africa during World War II over a fairly long period of combat. Not only do these curves indicate that a great many patients entered theater level hospitals with very short convalescent times, but the curves give no indication of the particular combat zone medical facilities and evacuation procedures which were employed.

CONCLUSIONS AND RECOMMENDATIONS

The scope of this report obviously does not permit a complete discussion of the total capabilities of the NAMES Model, or of all the results

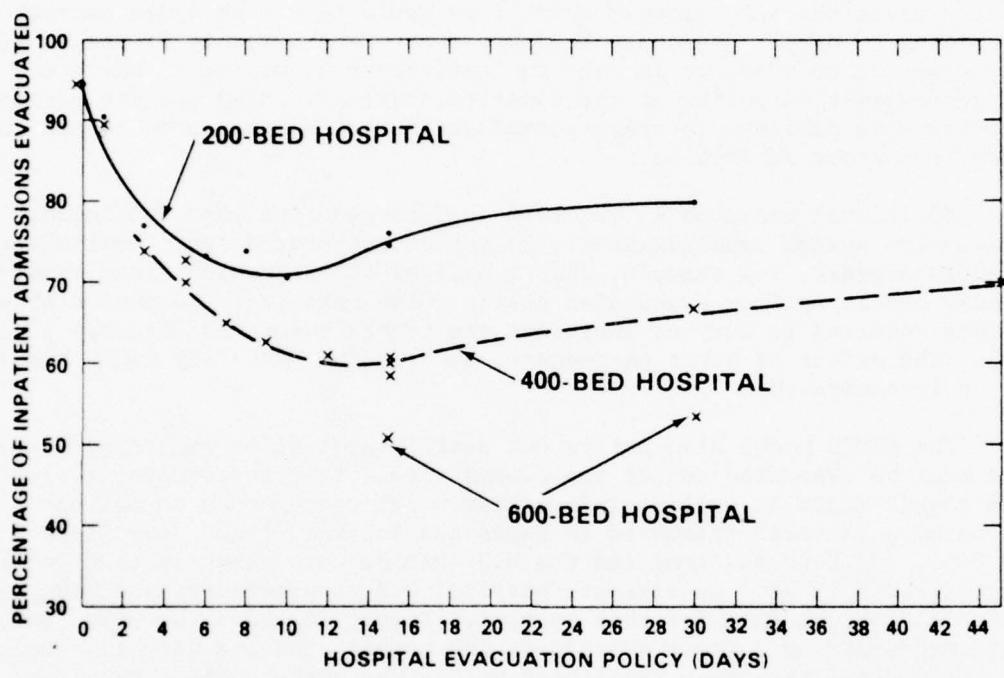


Fig. 12 — Impact of evacuation policy on hospital evacuations

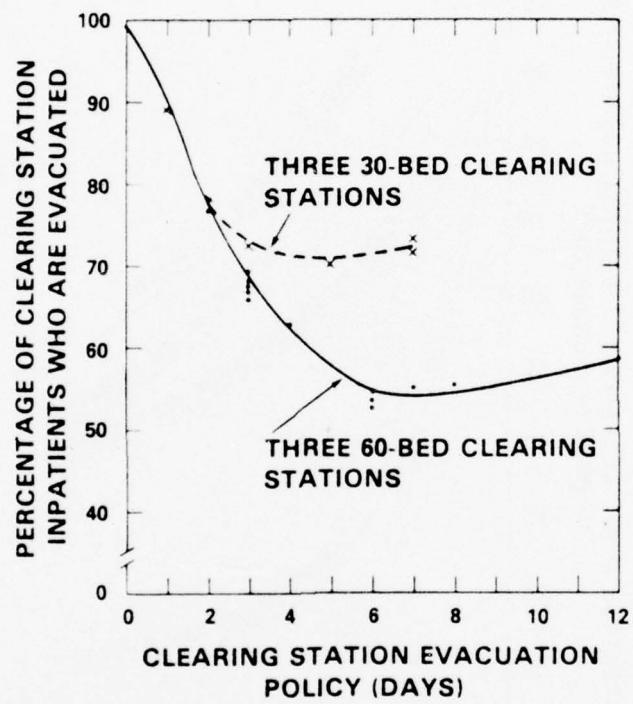


Fig. 13 — Impact of evacuation policy on clearing station evacuations

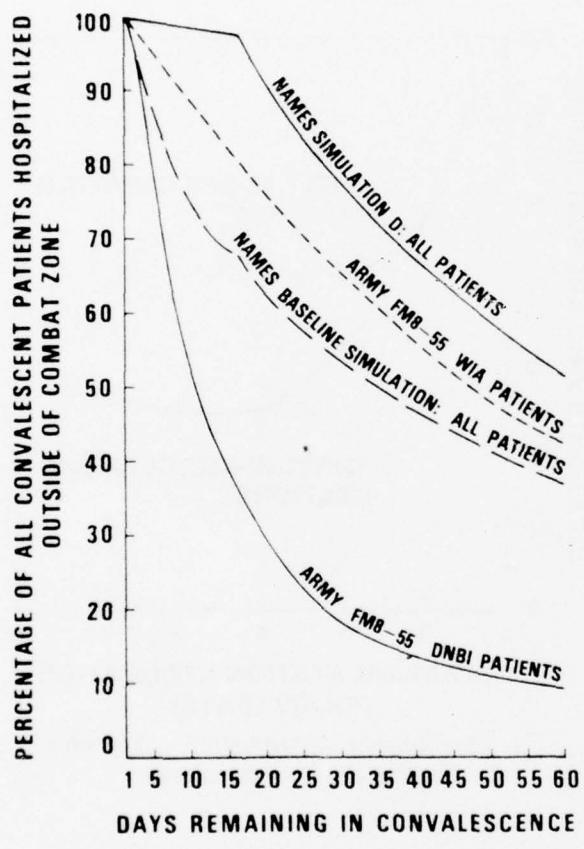


Fig. 14 — Convalescent patient remaining time
in hospitals outside of combat zone

obtained from the model thus far. Further details of the operation of the model will be contained in the Program Maintenance Manual. It is hoped that the present discussion demonstrates that the model is an effective (and inexpensive) device for planning and studying combat zone medical care systems together with the requirements those systems impose on supporting medical, transportation, and logistics resources.

It is also hoped that the user of NAMES II, the analyst to whom this report is addressed, will realize that a combat zone medical evacuation system is complex and that a model that simulates such a system must also be complex. To obtain meaningful results from such a simulation model, the user must study and understand the model so that he realizes its capabilities and its limitations. NAMES II is a discrete simulation model based on logical relationships. It attempts to simulate real situations, and does not use formulas or assumptions for computing resource requirements. The model is sensitive to the patient load and patient "mix," as one would expect of a real medical evacuation system.

This report has demonstrated that patient dispositions in a combat zone depend on many factors, including resources, command control policies and medical regulating procedures. Clearly, any "models" and other contingency planning methods which ignore these factors must be used with great caution.

Studies using NAMES II have also indicated the need for additional research to better understand the relationships between patient dispositions, resource requirements, allocations and utilization, medical regulating procedures and command control or operational policies. Several recommended areas for additional research have been identified in this report. These include:

1. effects of treater availability and treatment delay times on patient dispositions and resource requirements,
2. medical regulating procedures and their effect on patient dispositions and resource requirements,
3. combat zone evacuation policies and their effect on patient dispositions and resource requirements.

REFERENCES

1. Richards, Paul B., "Simulating Medical Treatment and Evacuation of Combat Casualties," proceedings of NATO-sponsored conference on Systems Science in Health Care, July 5-9, 1976, Paris, France.
2. Computer Sciences Corp., Falls Church, Va. "U. S. Army Medical Planning Factors Study (MEDPLN), Final Report, Vol. 111," 30 September 1973.
3. McEliece, J. H., Capt., U.S. Army, "U. S. Army Medical Planning Factors Study (MEDPLN), Final Report, Vol. 11, Appendix G, The Patient Workload Model," April 1975, U.S. Army Logistics Center, Ft. Lee, Va. 23801
4. Beebe, G. W. and DeBakey, M. E., Battle Casualties, Charles C. Thomas, Publisher, Springfield, Illinois, 1952.
5. Department of the Army Field Manual FM 8-55, Army Medical Service Planning Guide, October, 1960.

APPENDIX A

INPUT PARAMETERS FOR NAMES II

BASELINE SIMULATION

TABLE A-1
MEAN NUMBER OF BATTLE CASUALTIES (INPATIENTS)
IN THE BASELINE SIMULATION

<u>Day</u>	<u>Battle Casualties</u>
1	241
2	680
3	512
4	222
5	158
6	321
7	217
8	222
9	92
10	255
11	348
12	168
13	60
14	65
15	<u>54</u>
	3,615 TOTAL

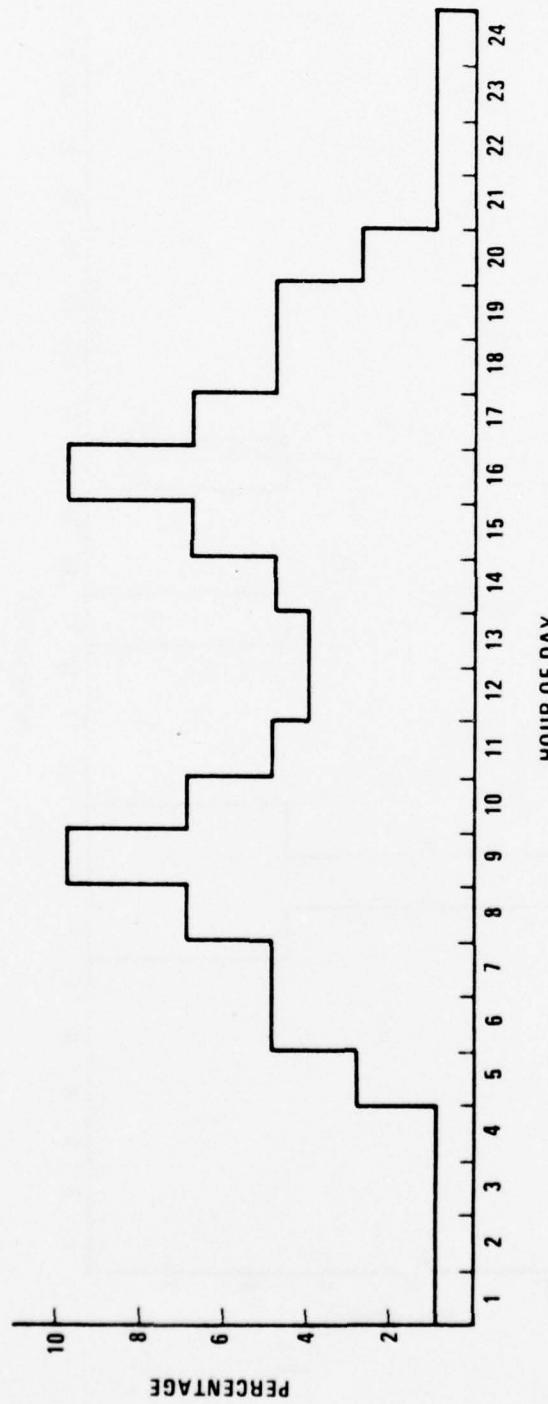


Fig. A-1 — Percentage distribution of battle casualty arrivals by hour of day

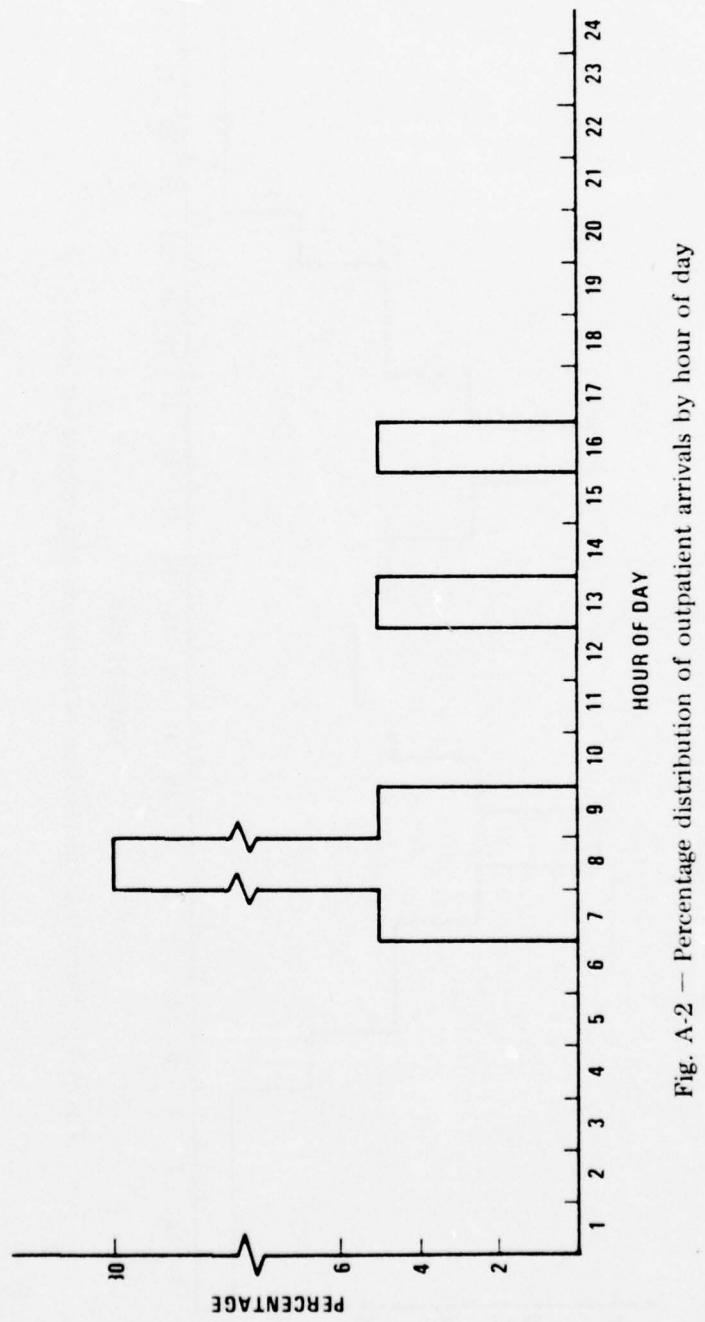


Fig. A-2 — Percentage distribution of outpatient arrivals by hour of day

TABLE A-2
PROPORTIONAL DISTRIBUTIONS OF CASUALTIES
AMONG PATIENT CLASSES

<u>Patient Class *</u>	Percent in Class	
	<u>Inpatients</u>	<u>Outpatients</u>
1	.15	
2	.02	
3	1.24	
4	.42	
5	.23	
6	.90	
7	.37	
8	.37	
9	.00	
10	.49	
11	1.15	
12	1.48	
13	3.46	
14	.16	
15	.64	
16	.21	
17	.49	
18	.27	1.80
19	.41	
20	1.07	1.00
21	.16	
22	.38	
23	.38	
24	1.42	
25	2.50	
26	10.01	
27	.48	
28	.48	
29	.53	
30	1.23	

*See Table A-4 for Patient Class Descriptions.

TABLE A-2 (continued)

<u>Patient Class</u>	<u>Percent in Class</u>	
	<u>Inpatients</u>	<u>Outpatients</u>
31	5.34	
32	5.34	
33	3.98	
34	.03	
35	1.76	
36	5.78	
37	.64	
38	1.18	
39	3.62	
40	.19	
41	.69	
42	.57	
43	1.10	
44	.01	
45	1.38	.10
46	2.73	27.30
47	.47	.70
48	2.24	.70
49	1.42	
50	.26	12.00
51	.04	
52	.31	2.40
53	4.08	7.40
54	.32	1.70
55	.93	.40
56	1.47	6.30
57	.84	14.20
58	.15	5.10
59	.41	1.10
60	.26	
61	2.89	4.80
62	.30	
63	3.66	1.10

TABLE A-2 (continued)

<u>Patient Class</u>	<u>Percent in Class</u>	
	<u>Inpatients</u>	<u>Outpatients</u>
64	.18	
65	.25	
66	1.35	
67	.00	1.50
68	3.06	5.40
69	.58	
70	3.13	
71	.07	.60
72	1.74	.60
73	.26	
74	3.01	3.80
75	.88	

TABLE A-3
TREATER DESCRIPTIONS AND ASSIGNMENTS

NAMES Code	*	MOS	Description	BAS	CS	HOSP
1		2100	General Surgeon		1	1
		2100	Orthopedic Surgeon		1	1
2		2900	Ward Nurse (Medical/Surgical)		2	19
3		2100	Medical General Practitioner	2	2	6
4		8404	Hospital Apprentice			26
5		8404	Hospitalman	15		2
		8404	Surgical Ward Corpsman		12	25
6	<u>8483</u>	8404	Hospital Corpsman	6	10	16
7	<u>8483</u>	8404	Operating Room Technician		4	3
8			NA			
9		2100	Dental Team			1
10		2100	Psychiatrist			1
11		2300	Clinical Psychiatrist			1
12			NA			
13		8412	Laboratory Technician		2	3
14		2300	Optometry Team			1
15		8404	Litter Team (4 each)	1	4	6
16		8452	X-Ray Technician		2	3
17		2100	Internist			1
18		2900	OR Nurse		4	11
19		2900	Neuropsych Nurse			3
20		2300	Medical Technologist			1

*MOS - Military Occupation Specialty (U.S. Navy)

TABLE A-4
PATIENT CLASS DESCRIPTIONS

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
1	Head: Fracture, Comp. Com.
2	Head: Fracture, Simple
3	Head: Wound, P&P
4	Head: Wound, Incised
5	Head: Concussion, Severe
6	Head: Concussion, Mild
7	Face: Fracture, Comp. Com., Severe
8	Face: Fracture, Comp. Com., Mild
9	Face: Fracture, Simple
10	Face: Wound, P&P, Severe
11	Face: Wound, P&P, Mild
12	Face: Wound, Incised, Lac, Severe
13	Face: Wound, Incised, Lac, Mild
14	Eye (and Orbit): Other Trauma, Severe
15	Eye (and Orbit): Other Trauma, Mild
16	Neck: Wound, Incised and Lac, Severe
17	Neck: Wound, Incised and Lac, Mild
18	Eye: Inflammatory Diseases
19	Eye: Other Eye Diseases (Refractions & Tests)
20	Ear: Inflammation
21	Dental Diseases and Conditions

TABLE A-4 (Cont.)

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
22	Upper Extremities, Fracture, Comp. Com., Severe, to Include: Crushing and/or Compression Injuries and/or Partial or Traumatic Amputations
23	Upper Extremities, Fracture, Comp. Com., Mild, to Include: Crushing and/or Compression Injuries and/or Partial or Traumatic Amputations
24	Upper Extremities: Fracture, Simple
25	Upper Extremities, Wound, P&P Incised, Severe
26	Upper Extremities, Wound, P&P Incised, Mild
27	Lower Extremities, Fracture, Comp. Com., Severe to Include: Pelvic Fractures and Fractures of the Hip; Crushing and/or Compression Injuries; Partial or Traumatic Amputations
28	Lower Extremities, Fracture, Comp. Com, Mild to Include: Pelvic Fractures and Fractures of the Hip; Crushing and/or Compression Injuries; Partial or Traumatic Amputations
29	Lower Extremities, Fracture, Simple, Severe, to Include: Fracture in Front of Pelvis
30	Lower Extremities, Fracture, Simple, Mild, to Include: Fracture in Front of Pelvis
31	Lower Extremities, Wound, P&P, Lac, Severe
32	Lower Extremities, Wound, P&P, Lac, Mild
33	Other Musculoskeletal (Requiring Surgery), Compression Fractures (Vertebra), Angulation Fractures (Vertebra) (without cord involvement)
34	Osteomyelitis
35	Diseases of Bones and Joints to Include: Arthritis, Rheumatoid Arthritis, Osteoarthritis, Bone Tumors (no surgery required)
36	Thorax: Wound, P&P, Severe
37	Thorax: Wound, P&P, Mild

TABLE A-4 (Cont.)

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
38	Thorax: Wound, P&P, Heart and Trachea, Severe
39	Abdominal, Wound, P&P, Severe
40	Abdominal, Wound, P&P, Mild
41	Neoplastic Diseases: Pilonidal Cysts and Sinuses (surgery required)
42	Varicose Veins (Hemorrhoids)
43	Emergency Surgical Conditions (Nontraumatic) to Include: Appendicitis, Hernia, Gall Bladders
44	Ulcer (Bleeding or Obstructing)
45	Burns: 1° - 2° - 3°
46	Lacerations and Contusions to Include: Lacerations, NEC; Contusions, Abrasions, Hematomas; Foreign Bodies, and Puncture Wounds, Mild, Not Elsewhere Covered
47	Wounds/Injuries of Genito-Urinary System
48	Diseases of the Urinary System to Include: Renal Calculus, Hematuria
49	Neurosurgical Conditions (Nontraumatic) to Include: Brain Tumors; Brain Abscesses; Increased Intracranial Pressure; Aneurysms of Blood Vessels of Brain, and Hyperthermia
50	Spinal Injuries to Include: Cord Compression, Herniated Intervertebral Disk, and Tumors, and Cord Involvement
51	Tuberculosis and body areas affected by Tubercule Bacilli
52	Allergies to Include: Allergic Reactions; Urticaria (Hives); Angioneurotic Edema, and Allergic Rhinitis (Hay Fever)
53	Diseases of Skin and Cellular Tissue to Include: Eczema; Psoriasis; Impetigo Contagiosa; Verrucae (Warts); Scabies Herpes (Simple/Zoster); Furuncle, Carbuncle; Furunculosis; Dermatophytosis, and Dermatitis
54	Venereal Diseases

TABLE A-4 (Cont.)

<u>PATIENT CLASS</u>	<u>DESCRIPTION</u>
55	Cardiac Conditions to Include: Arrhythmias; Congestive Heart Failure; Bacterial Endocarditis; Pericarditis; Acute Pulmonary Edema; Coronary Heart Disease (Myocardial Infarct and Angina Pectoris); Rheumatic Heart Disease; Rheumatic Fever, and Hypertension
56	Acute Respiratory Infections to Include: Pneumonia; Pleurisy; Influenza; Bronchitis, Acute/Chronic
57	Disease of Nose and Throat to Include: Laryngitis; Pharyngitis; Nasopharyngitis; Tonsillitis; Peritonsillar Abscess; Strep Throat
58	Diseases of the Sinuses and Nose to Include: Sinusitis, Acute; Sinusitis, Chronic; Deviated Septum; Polyps, and Epistaxis
59	Other Pulmonary Disorders to Include: Emphysema; Bronchiectasis; Empyema; Lung Abscess, and Bronchial Asthma
60	Metabolic and Nutritional Diseases
61	Intestinal Diseases and Conditions to Include: Gastritis, Gastroenteritis, and Enteritis
62	Peptic Ulcer
63	FUO
64	Blood Dyscrasias
65	Poisoning: Food, Drug, Alcohol (Acute), and Gas
66	Exposure to Extreme Temperatures to Include: Heatstroke, Heat Exhaustion, Heat Cramps, and Frost Bite
67	Insect and Reptile Bites
68	All Other Diagnoses and Conditions
69	Contagious Viral Diseases: Hepatitis; Infectious Mononucleosis; Meningitis, Aseptic and Meningitis, and Meningococcal
70	Malaria

TABLE A-4 (Cont.)

PATIENT <u>CLASS</u>	<u>DESCRIPTION</u>
71	All Other Viral Diseases to Include: Poliomyelitis, Smallpox, Yellow Fever, Rabies, Psittacosis, Trachoma, Measles, Chicken Pox, and Rubella, Mumps, Whooping Cough
72	All Bacterial Diseases to Include: Hansen's Disease, Typhoid, Cholera, Plague, Brucellosis, Bacillary Dysentery, and Tetanus; Protozoan Infections (Amoebic Dysentery), and Rickettsial Infection (Typhus)
73	Psychosis
74	Psychiatric Conditions Except Psychosis to Include: Anxiety Reactions; Situational Maladjustment, Character Disorders; and Drug Abuse
75	Neurological Problems to Include: Paraplegia, Quadriplegia, Epilepsy, Migraine, Hemiplegia, Encephalitis, Headache, Multiple Sclerosis, Myasthenia Gravis, and Parkinson's Disease

TABLE A-5
TREATMENT PARAMETERS FOR EACH PATIENT CLASS

<u>PATIENT CLASS¹</u>	<u>PRIORITY²</u>	<u>L OR A³</u>	<u>WORK UNITS⁴</u>
1	1	L	6, 17, 9, 15, 33, 14, 41, 42, 11, 13, 5, 6
2	1	50%L	6, 33, 9, 42, 11, 5
3	1	L	6, 9, 15, 33, 14, 41, 42, 13, 11, 5, 6
4	2	L	6, 12, 33, 29, 11, 9, 5, 6
5	2	L	6, 33, 43, 5, 6
6	3	L	6, 33, 43, 5, 6
7	1	L	6, 9, 15, 12, 33, 41, 42, 13, 11, 5, 6
8	1	L	6, 17, 33, 41, 42, 13, 11, 9, 5, 6
9	3	A	33, 9, 10, 5
10	1	L	6, 15, 12, 33, 41, 42, 43, 13, 13, 11, 5, 6
11	2	A	17, 33, 41, 11, 5
12	2	L	6, 9, 12, 33, 41, 42, 11, 13, 5, 6
13	3	A	9, 33, 29, 11, 13, 5
14	1	L	6, 9, 35, 11, 38, 5, 6
15	2	A	9, 35, 11, 38, 5
16	2	L	6, 17, 9, 15, 41, 42, 11, 13, 5, 6
17	3	A	9, 29, 11, 11, 5
18	3	A	8, 35, 38, 5
19	3	A	35, 5
20	3	A	8, 5
21	3	A	7, 40, 5
22	2	L	6, 33, 9, 12, 41, 43, 11, 10, 13, 5, 6
23	3	L	6, 33, 9, 12, 41, 43, 11, 10, 13, 5, 6
24	3	A	33, 9, 11, 10, 8, 5
25	2	50%L	6, 33, 9, 41, 43, 11, 10, 13, 5

1 See Table A-4 for Patient Class Descriptions.

2 1 = Urgent, 2 = Immediate, 3 = Routine.

3 L = litter, A = ambulatory.

4 See Table A-6 for Work Unit Descriptions.

TABLE A-5 (Cont.)

TREATMENT PARAMETERS FOR EACH PATIENT CLASS

<u>PATIENT CLASS¹</u>	<u>PRIORITY²</u>	<u>L OR A³</u>	<u>WORK UNITS⁴</u>
26	3	A	33, 9, 29, 11, 8, 5
27	1	L	6, 33, 9, 14, 27, 41, 43, 11, 10, 13, 38, 5, 6
28	1	L	6, 33, 9, 14, 27, 41, 43, 11, 10, 13, 38, 5, 6
29	1	L	6, 33, 9, 14, 27, 41, 43, 11, 10, 13, 38, 5, 6
30	2	L	6, 33, 9, 14, 27, 41, 43, 11, 10, 22, 13, 38, 5, 6
31	1	L	6, 33, 9, 12, 41, 43, 11, 13, 5, 6
32	3	A	33, 9, 29, 11, 13, 5
33	2	L	6, 33, 9, 27, 28, 41, 10, 13, 9, 5, 6
34	3	A	33, 44, 45, 8, 38, 5
35	3	A	33, 44, 45, 8, 38, 5
36	1	L	6, 17, 16, 41, 43, 11, 30, 13, 33, 31, 9, 5, 6
37	1	L	6, 17, 41, 43, 11, 30, 33, 9, 5, 6
38	1	L	6, 17, 15, 14, 41, 33, 42, 11, 30, 13, 9, 5, 6
39	1	L	6, 41, 30, 33, 28, 44, 43, 11, 13, 9, 6
40	1	L	6, 41, 33, 30, 44, 11, 13, 9, 6
41	3	A	19, 11, 8, 5
42	3	A	19, 8, 5
43	1	50%L	6, 41, 44, 43, 11, 13, 9, 5
44	1	L	6, 33, 41, 13, 30, 9, 5
45	2	L	6, 14, 41, 30, 31, 11, 13, 9, 5, 6
46	3	A	33, 29, 18, 11, 9, 5
47	1	L	6, 33, 41, 31, 11, 13, 30, 5
48	3	A	33, 31, 9, 5
49	1	L	6, 33, 41, 9, 5
50	1	L	6, 33, 41, 10, 9, 8, 38, 5

TABLE A-5 (Cont.)
TREATMENT PARAMETERS FOR EACH PATIENT CLASS

<u>PATIENT CLASS¹</u>	<u>PRIORITY²</u>	<u>L OR A³</u>	<u>WORK UNITS⁴</u>
51	3	A	33, 31, 8, 38, 5
52	3	A	31, 9, 8, 38, 5
53	3	A	11, 9, 8, 38, 5
54	3	A	2, 31, 9, 8, 5
55	1	L	6, 34, 33, 43, 9, 8, 38, 5
56	1	A	33, 31, 9, 8, 5
57	3	A	2, 33, 31, 9, 8, 5
58	3	A	2, 31, 8, 5
59	3	A	2, 33, 31, 9, 8, 5
60	3	A	33, 31, 8, 38, 5
61	3	A	31, 8, 5
62	3	A	33, 31, 8, 38, 5
63	3	A	31, 8, 5
64	3	A	31, 8, 5
65	1	75%L	6, 17, 31, 43, 45, 8, 5
66	1	75%L	6, 20, 13, 31, 8, 5
67	3	A	23, 9, 8, 5
68	3	A	2, 33, 11, 31, 9, 8, 38, 5
69	1	80%L	6, 33, 31, 32, 9, 8, 38, 5
70	2	A	31, 32, 9, 8, 38, 5
71	1	A	33, 31, 45, 9, 8, 5
72	1	50%L	6, 13, 31, 45, 9, 38, 5
73	2	75%L	6, 1, 9, 8, 36, 5
74	2	50%L	6, 1, 9, 8, 36, 5
75	1	50%L	6, 31, 45, 8, 4, 38, 43, 5

TABLE A-6
WORK UNIT DESCRIPTIONS

NO.	SHORT TITLES	BRIEF DESCRIPTIONS
1	Psychotherapy	Psychological first aid
2	Sick Call	Routine DX/TX, e.g., URI, sore throats, etc.
3	Sorting (Triage)	Arranging for patient evacuation to facility best suited for illness or injury.
4	Resuscitative Nursing Care	Initial care given.
5	Administration	Clinical records prepared by professional staff.
6	Litter Hauling	Performed in and around facility.
7	Dental Screen	Preliminary dental examinations based upon a painful condition.
8	Issue Medication	Dispensing non-inject-type medications.
9	Give Injections	Administration of injectible medications.
10	Splints	Immobilize the affected site.
11	Dressings	Protect wound.
12	Clamp Ligate	To obtain effective hemostasis.
13	IV Fluids	Use of plasmanate, ringers, Lactage, etc.
14	Cut Down	Surgical insert of an intra-cath.
15	Surgical Airway (Allowable delay time - 30 minutes)	Surgical procedures to open an airway and/or endotracheal tube insertion.
16	Seal Sucking Chest Wound. (15 minutes)	
17	Resp. Resuscitation (5 minutes)	Perform mouth-to-mouth resuscitation. Mechanical resuscitation (pulmator) where equipment is available.
18	RX Minor Abrasions	Wash, clean, dress minor contusions/abrasions
19	I&D Abscess	Surgical drain minor abscess.
20	Environment Stress Treatment	Treat heat and cold injuries.

TABLE A-6 (Cont.)

WORK UNIT DESCRIPTIONS

NO.	SHORT TITLES	BRIEF DESCRIPTIONS
21	Follow-up Nursing Care	Continuing Care.
22	Cast Fx	Immobilize closed Fx or minor bones
23	Antidote for Insect & Reptile bites	Antidote for insect and reptile bites.
24	Thorocentesis	Withdrawal of air/blood.
25	Insert Chest Tube and Intercostal N Block	Use of local anesthetic to reduce pain from insertion of chest tube.
26	N/A	
27	Insert Foley Cath.	Insert Foley Cath. in GU injuries.
28	Insert N/G Tube	Inserted to reduce abdominal gases.
29	Debridement	Surgical cleansing of minor wounds.
30	Administer Blood	Capability of administering type O low titer
31	Lab Exams	Simple lab studies, e.g., urine, Hb, WBC.
32	Dx Malaria	With lab can perform malaria screen of Dx.
33	Xray (per film)	Diagnostic chest and bone xrays.
34	EKG	Can perform emergency electrocardiograms
35	Eye care	Eye care including eye surgery, nursing care, etc.
36	Psychiatric Care	Emergency psychiatric care.
37	Ward Rounds	Daily rounds on ward patients.
38	Consultation	Referral cases.
39	N/A	
40	Dental Care	Expedient dental care.

TABLE A-6 (Cont.)

WORK UNIT DESCRIPTIONS

NO.	SHORT TITLES	BRIEF DESCRIPTIONS
41		Major debridement or major surgery at the hospital.
42		Treatment of head, face and throat injuries requiring specially trained nurse.
43		Treatment requiring Operating Room Nurse or specially trained Hospital Corpsman.
44		Treatment requiring Internist.
45		Extensive Lab Exams.

TABLE A-7
PREFERRED TREATER CODES FOR EACH WORK UNIT AND ASSOCIATED TIMES

WORK UNIT ¹	PREFERRED TREATER		1ST ALTERNATE		2ND ALTERNATE		3RD ALTERNATE	
	CODE ²	E ³	CODE	E	CODE	E	CODE	E
1	7	45	4	45	6	45	5	45
2	3	5	2	5	4	5	6	5
3	1	4	3	4	4	5	6	5
4	3	30	4	30	2	30	6	30
5	3	3	4	3	6	3	5	3
6	15	3						
7	9	5	3	8	4	9		
8	5	2	6	2				
9	5	1	6	1	4	1		
10	5	15	6	15	4	15		
11	6	10	5	10	4	10		
12	3	10	4	10	6	10	1	10
13	3	6	4	6	6	6		
14	6	15	3	15	4	15		
15	6	3	1	3	3	3	4	3
16	5	15	6	15	4	15		
17	4	3	5	3				
18	5	9	6	9				
19	3	7	4	7	6	7		
20	6	45	5	45				
21	5	25	6	25				
22	7	25	5	25				
23	5	10	6	10	4	10		
24	1	15	3	15	2	15		
25	1	15	3	15	6	15		
26								
27	1	9	6	9	5	9		
28	2	9	3	9	6	9		
29	1	35	3	35	6	35		
30	2	8	1	8	4	8	6	8
31	13	5	5	5	6	5		
32	2	30	4	30	13	30		
33	16	8	6	8				
34	5	12	6	12				
35	14	20						

1 See Table A-6 for work unit descriptions.

2 See Table A-3 for treater code descriptions.

3 Expected treatment time in minutes.

TABLE A-7 (Cont.)

PREFERRED TREATER CODES FOR EACH WORK UNIT AND ASSOCIATED TIMES

WORK UNIT ¹	PREFERRED TREATER		1ST ALTERNATE		2ND ALTERNATE		3RD ALTERNATE	
	CODE^{2}	E^{3}	CODE^{2}	E^{3}	CODE^{2}	E^{3}	CODE ²	E ³
36	10	30	11	30	7	30	/	
37	3	2	4	2	2	2	/	
38	2	12	1	12			1	2
39								
40	9	60						
41	1	35	2	70				
42	19	25						
43	18	25	6	50				
44	17	45	3	45				
45	20	15	13	30				

TABLE A-8
CRITICAL TREATMENT THRESHOLD TIMES AND WORK UNITS

PATIENT CLASS ¹	MORTALITY THRESHOLD TIME AT ENTRY FACILITY (MINUTES)	Critical Mortality Work Unit ² (TO KEEP PATIENT FUNCTIONAL)	ALLOWABLE DELAY TIME TO COMPLETE (MINUTES)	Critical Convalescent Work Unit ²	ALLOWABLE DELAY TIME TO COMPLETE (HOURS)
1	5	41	180	41	1
2		42	360	42	3
3	30	41	180	41	1
4		29	720	29	6
5		43	180	43	1
6		43	1440	43	12
7	30	41	180	41	1
8	5	41	360	41	3
9		10	1440	10	12
10	30	41	180	41	1
11	5	41	360	41	3
12		41	180	41	1
13		29	720	29	6
14		35	720	35	6
15		35	720	35	6
16	5	41	120	41	1
17		29	720	29	6
18		35	1440	35	12
19		99		35	12
20		99		8	12
21		99		40	36
22		41	180	41	1
23		41	180	41	1
24		99		10	72
25		41	360	41	3

1 See Table A-4 for Patient Class Descriptions

2 See Table A-6 for Work Unit Descriptions.

TABLE A-8 (Cont.)
CRITICAL TREATMENT THRESHOLD TIMES AND WORK UNITS

PATIENT CLASS ¹	MORTALITY THRESHOLD TIME AT ENTRY FACILITY (MINUTES)	Critical Mortality Work Unit ² (TO KEEP PATIENT FUNCTIONAL)	ALLOWABLE DELAY TIME TO COMPLETE (MINUTES)	Critical Convalescent Work Unit ²	ALLOWABLE DELAY TIME TO COMPLETE (HOURS)
26		29	720	29	6
27		41	180	41	1
28		41	180	41	1
29		41	220	41	2
30		41	480	41	6
31		41	360	41	3
32		29	720	29	6
33		41	240	41	2
34		99		8	72
35		99		8	72
36	5	41	180	41	1
37	5	41	360	41	3
38	5	41	180	41	1
39		41	180	41	1
40		41	360	41	3
41		19	1440	19	12
42		19	1440	19	12
43		41	360	41	3
44		41	1440	41	12
45		41	1440	41	12
46		99		29	6
47		41	360	41	3
48		99		9	24
49		41	1440	41	12
50		41	360	41	4

TABLE A-8 (Cont.)
CRITICAL TREATMENT THRESHOLD TIMES AND WORK UNITS

PATIENT CLASS ¹	MORTALITY THRESHOLD TIME AT ENTRY FACILITY (GIVEN IN %)	Critical MORTALITY WORK UNIT ² (TO KEEP PATIENT FUNCTIONAL)	ALLOWABLE DELAY TIME TO COMPLETE (MINUTES)	Critical CONValescent WORK UNIT ²	ALLOWABLE DELAY TIME TO COMPLETE (HOURS)
51		99		8	12
52		99		9	12
53		99		9	12
54		99		9	24
55		43	240	43	2
56		9	720	9	6
57		8	1440	8	12
58		99		8	72
59		99		8	72
60		99		8	72
61		99		8	24
62		99		8	24
63		99		8	24
64		99		8	24
65	5	43	180	43	2
66		20	180	20	1
67	5	99		9	12
68		99		99	
69		9	240	9	2
70		9	260	9	3
71		9	240	9	2
72		9	240	9	2
73		36	360	36	3
74		36	480	36	4
75		4	360	4	3

TABLE A-9
 SECOND FACILITY LEVEL (SECFAC)
 FOLLOWING EVACUATION FROM
 ENTRY FACILITY

Patient Class ¹	SECFAC Level ²	Patient Class ¹	SECFAC Level ²	Patient Class ¹	SECFAC Level ²
1	4	26	2	51	3
2	4	27	4	52	3
3	4	28	4	53	3
4	2	29	4	54	2
5	2	30	3	55	4
6	2	31	4	56	4
7	4	32	2	57	2
8	4	33	4	58	2
9	2	34	3	59	2
10	4	35	4	60	3
11	2	36	4	61	2
12	4	37	4	62	3
13	2	38	4	63	2
14	4	39	4	64	2
15	4	40	4	65	4
16	4	41	2	66	4
17	2	42	2	67	2
18	4	43	4	68	3
19	4	44	4	69	4
20	2	45	2	70	3
21	4	46	2	71	4
22	4	47	4	72	4
23	4	48	2	73	3
24	2	49	4	74	3
25	4	50	4	75	4

1 - See Table A-4 for Patient Class Descriptions.

2 - SECFAC Level 2 = BAS, 3 = CS, 4 = Hospital.

APPENDIX B

INSTRUCTIONS FOR PREPARATION
OF NAMES II INPUTS

The inputs required to successfully operate the NAMES II Model consist of the following:

- The patient class data describing the attributes and treatment characteristics of each patient class.
- The work unit data describing for each work unit the preferred and alternate treaters and the associated treatment times.
- The patient type data describing for each type of patient (inpatients and outpatients) the proportional distribution of patients entering the evacuation chain at each facility level and the proportional distribution of casualties among the patient classes.
- The patient priority data describing for each patient priority the associated stabilization time prior to evacuation, the evacuation queue threshold time and the additional treatment threshold time.
- The rate of arrival data specifying for each patient type (inpatients and outpatients) the average daily arrivals during the combat period as well as the proportional distribution of the arrivals for each hour of the day.
- The configuration data which describes the structure of the evacuation system, including the resources allocated to each facility and the rules for the employment of evacuation vehicles.

The NAMES II Model reads all the above inputs in free form fashion (i.e., no specific card column has to be used to present an input datum to the model); rather, the input is treated as a stream consisting of fields. Fields are, of necessity, order-dependent and must be separated from each other by at least one blank. Depending on the requirements of the model, fields may contain either alphanumeric data, integer data or real data. An alphanumeric field can contain any character; an integer field represents a number and therefore can only contain the digits 0 through 9; a real field represents a decimal number and therefore contains a decimal point in addition to the digits 0 through 9.

Each group of data, such as the patient class data or the rate of arrival data is headed by an alphanumeric keyword identifying the data that follows it. For instance, the patient class data starts with the keyword CLASS and the rate of arrival data is headed by the keyword RATES.

The following describes each required data group in detail.

PATIENT CLASS DATA GROUP

The patient class data group must contain the following two descriptive fields before the data for each patient class:

- o First Field: The word CLASS.
- o Second Field: The total number of patient classes (integer).

The data describing each patient class follows and must be prepared for each class in ascending order. It consists of the following information to be repeated for each patient class:

- Field 1. Patient class number.
- Field 2. Priority associated with the patient class. An integer number between 1 and 4.
- Field 3. Mobility factor associated with the class. This is the probability that the patient will be ambulatory and is a real number between 0.0 and 1.0. A mobility factor of 0.0 indicates that a patient within this class will be a litter patient, whereas a mobility factor of 1.0 indicates an ambulatory patient. Any number between 0.0 and 1.0 can be specified.
- Field 4. Mortality threshold time at the entry facility, specified in minutes. Treatment must begin before this amount of time elapses, otherwise the patient will die. It must be an integer number. A value of 0 in the field indicates that it is not applicable for this patient class.
- Field 5. Critical mortality work unit allowable delay time, in minutes. This represents the amount of time within which a patient of this class must complete his critical mortality work unit, otherwise he will die. It must be an integer number.
- Field 6. Critical convalescent work unit allowable delay time, in hours. This represents the amount of time within which a patient of this class must complete his critical convalescent work unit to avoid an increase in his convalescent time.
- Field 7. Second facility (SECFAC) level to which a patient of this class should be evacuated following his entry in the system. Facility levels are numbered from 1 to n starting at the Forward Edge of the Battle Area (FEBA).
- Field 8. The alphanumeric keyword WU marking the beginning of the list of work units associated with this patient class.
- Field 9. An integer number indicating the total number of work units to be performed (nwu) for this class.
- Field 10. These fields represent the list of the treatment work units which must be performed on the patients of this class. Each work unit in the list is described by the following elements:
- o The work unit number which must be an integer number in the range of 1 to the maximum number of work units as specified in the work unit data group.

- o Following the work unit number, the user can specify whether that work unit is a first aid work unit, a critical mortality work unit, or a critical convalescent work unit.
 - The first aid work unit is identified by the letter F following the work unit number.
 - The critical mortality work unit is identified by the letter M.
 - The critical convalescent work unit is identified by the letter C.

When present, each of these letters constitutes a field, and must therefore be separated from other fields by blanks.

Any work unit can be described as first aid, critical to mortality or critical to convalescence. If the same work unit has more than one of the properties described above, it must be followed by the corresponding descriptive letters. These descriptive letters can appear in any order. If a given patient class does not have a first aid work unit, a critical convalescent work unit or a critical mortality work unit, the corresponding descriptive letters must be omitted.

Remaining Fields	The remaining data fields for a patient class contain the <u>convalescent time probability distribution</u> . This probability distribution consists of an arbitrarily long sequence of pairs of numbers. The first number in the pair represents the probability, and must be a real number; the second number represents the number of days of convalescence associated with that probability and must be an integer number. This probability distribution can be input in terms of individual probabilities or in terms of cumulative probabilities. If it is a cumulative probability distribution, the last probability must be equal to 1.0; if it is an individual probability distribution the sum of the probabilities must be equal to 1.0. The distribution must be terminated by a *.
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An example of patient class data is presented in Figure B-1 for the first six patient classes used in the NAMES II baseline simulation. For example, patient class 2, which is a simple head fracture, consists of urgent patients (Priority 1), having a 50% probability of being ambulatory; there is no mortality threshold time at the entry facility; the critical mortality work unit must be completed within 360 minutes to keep the patients alive and the critical convalescent work unit must be completed within three hours to prevent an increase in the patients' convalescent time. Patients within this class will be evacuated to the fourth level in the system, which in this case represents the hospital. A total of 6 work units must be performed in sequence to treat these patients: first, work unit 6 (litter hauling), followed by work unit 33 (X-ray), work unit 9 (injections), work unit 42 (treatment of head injuries), which is the first aid work unit, the critical mortality work unit and the critical convalescent work unit, then work unit 11 (dressings) and finally work unit 5 (administration). The convalescent time distribution

CLASS
75

1	1	0.	5	180	1	4																
WU	12	6	17	9	15	33	14	41	C	M	F	42	11	13	5	6						
0.	1	.0034	2	.0052	3	.0095	4	.0095	5	.0112	6	.0138	7									
.0172	8	.0198	9	.0233	10	.0250	11	.0258	12	.0267	13	.0301	14									
.0301	15	.0310	16	.0319	17	.0319	18	.0362	19	.0396	20	.0422	21									
.0457	22	.0474	23	.0491	24	.0508	25	.0508	26	.0508	27	.0508	28									
.0534	29	.0534	30	.0568	31	.0568	32	.0577	33	.0594	34	.0629	35									
.0646	36	.0646	37	.0672	38	.0698	39	.0698	40	.0724	41	.0732	42									
.0749	43	.0784	44	.0784	45	.0801	46	.0827	47	.0853	48	.0904	49									
.0913	50	.0956	51	.0956	52	.0965	53	.1034	54	.1151	55	.1059	56									
.1120	57	.1171	58	.1180	59	.1249	60	1.0000	61	*												
2	1	.50	0	360	3	4																
WU	6	6	33	9	42	C	M	F	11	5												
0.	1	.0238	2	.0317	3	.0476	4	.0476	5	.0635	6	.0794	7									
.0873	8	.0952	9	.1032	10	.1190	11	.1190	12	.1508	13	.1746	14									
.1746	15	.1905	16	.2063	17	.2063	18	.2063	19	.2143	20	.2143	21									
.2143	22	.2222	23	.2222	24	.2302	25	.2302	26	.2381	27	.2542	28									
.2540	29	.2540	30	.2619	31	.2857	32	.2937	33	.3016	34	.3016	35									
.3175	36	.3175	37	.3254	38	.3254	39	.3333	40	.3492	41	.3571	42									
.3651	43	.3651	44	.3651	45	.3651	46	.3651	47	.3730	48	.3889	49									
.3889	50	.3889	51	.3889	52	.3889	53	.3968	54	.4048	55	.4048	56									
.4048	57	.4048	58	.4048	59	.4127	60	1.0000	61	*												
3	1	0.	30	180	1	4																
WU	11	6	9	15	33	14	41	C	M	F	42	13	11	5	6							
0.	0	.0631	1	.1166	2	.1508	3	.2038	4	.2450	5	.2945	6									
.3298	7	.3663	8	.3852	9	.4175	10	.4346	11	.4594	12	.4759	13									
.4947	14	.5159	15	.5371	16	.5583	17	.5677	18	.5783	19	.5901	20									
.6101	21	.6184	22	.6302	23	.6419	24	.6537	25	.6643	26	.6795	27									
.6867	28	.6938	29	.7038	30	.7055	31	.7114	32	.7220	33	.7256	34									
.7279	35	.7314	36	.7397	37	.7479	38	.7491	39	.7527	40	.7562	41									
.7597	42	.7597	43	.7619	44	.7621	45	.7633	46	.7633	47	.7656	48									
.7703	49	.7739	50	.7762	51	.7809	52	.7821	53	.7845	54	.7863	55									
.7915	56	.7951	57	.8021	58	.8057	59	.8057	60	1.0000	61	*										
4	2	0.	0	720	6	2																
WU	8	6	12	33	29	C	M	F	11	9	5	6										
0.	0	.2189	1	.3434	2	.4317	3	.4818	4	.5199	5	.5636	6									
.5917	7	.6228	8	.6505	9	.6713	10	.6843	11	.6964	12	.7057	13									
.7180	14	.7292	15	.7370	16	.7465	17	.7535	18	.7595	19	.7630	20									
.7647	21	.7716	22	.7813	23	.7829	24	.7863	25	.7889	26	.7924	27									
.7967	28	.7993	29	.8019	30	.8036	31	.8097	32	.8157	33	.8192	34									
.8218	35	.8227	36	.8253	37	.8287	38	.8313	39	.8339	40	.8365	41									
.8374	42	.8400	43	.8417	44	.8452	45	.8460	46	.8503	47	.8529	48									
.8555	49	.8581	50	.8617	51	.8642	52	.8651	53	.8668	54	.8663	55									
.8676	56	.8685	57	.8702	58	.8732	59	.8728	60	1.0000	61	*										
5	2	0.	0	180	1	2																
WU	5	6	33	43	C	M	F	5	6													
0.	9	.0363	10	.0881	11	.1140	12	.1710	13	.1813	14	.2021	15									
.2435	16	.2642	17	.2953	18	.3161	19	.3212	20	.3316	21	.3627	22									
.3679	23	.3938	24	.4041	25	.4093	26	.4456	27	.4560	28	.4560	29									
.4560	30	.4611	31	.4767	32	.4870	33	.4870	34	.4922	35	.4974	36									
.5130	37	.5181	38	.5233	39	.5285	40	.5440	41	.5544	42	.5544	43									
.5596	44	.5596	45	.5596	46	.5648	47	.5648	48	.5751	49	.5751	50									
.5751	51	.5803	52	.5907	53	.5907	54	.5959	55	.6010	56	.6114	57									
.6114	58	.6218	59	.6321	60	1.0000	61	*														
6	3	0.	0	1440	12	2																
WU	5	6	33	43	C	M	F	5	6													
0.	0	.3304	1	.5927	2	.7251	3	.7894	4	.8580	5	.9016	6									
.9395	7	.9786	8	.9912	9	1.0000	10	*														

Fig. B-1 — Sample patient class data (first 6 of 75 patient classes)

is prepared as a cumulative distribution and specifies that each patient in this class will have a convalescent time of between 2 and 61 days with a 0.2857 probability that his convalescent time will be 32 days or less (if not increased due to delays in treatment).

WORK UNIT DATA GROUP

This data group is identified by the words WORK UNIT and must contain the following information:

- The total number of work units.
- The description of the treater codes and treatment times for each work unit in ascending order as follows:
 - o The work unit number.
 - o The letter T must follow the work unit number designated for triage. If no work unit number is so identified, the model will assume that work unit 3 is the triage work unit.
 - o The number of types of treaters who can perform the work unit.
 - o For each type of treater, a pair of numbers where the first number represents the treater code and the second number represents the treatment time in minutes for the corresponding treater code.

All the numbers in this data group must be integers. Sample work unit input data is presented in Figure B-2. For example, work unit 41 (major surgery) can be performed by 2 treaters; the preferred treater is treater code 1 (general surgeon) who can perform this work unit in 35 minutes; the first alternate treater is treater code 3 (medical general practitioner) who can perform this same work unit in 70 minutes.

The treater codes specified in this data group must be consistent with the treater codes assigned at each treatment facility (see configuration data group). If the treater code and associated treatment time are both zero for a particular work unit number, that work unit number is not applicable. (See work units 26 and 39 in Figure B-2).

PATIENT TYPE DATA GROUP

This group of data is identified by the word TYPE followed by the number of patient types coming in the system (typically 1 or 2). In the NAMES II baseline simulation (see Figure B-3) there are 2 types, inpatients and outpatients.

The data describing each type follows and must be prepared for each type in ascending order.

Field 1 and Field 2. In the current NAMES II model these fields must contain the values 0.0 and 1, respectively.

WORK.UNIT

45

1	4	7	45	4	45	6	45	5	45
2	4	3	5	2	5	4	5	6	5
3	4	1	4	3	4	4	5	6	5
4	4	3	30	4	30	2	30	6	30
5	4	3	3	4	3	6	3	5	3
6	1	15	3						
7	3	9	5	3	8	4	9		
8	2	5	2	6	2				
9	3	5	1	6	1	4	1		
10	3	5	15	6	15	4	15		
11	3	6	10	5	10	4	10		
12	4	3	10	4	10	6	10	1	10
13	3	3	6	4	6	6	6		
14	3	6	15	3	15	4	15		
15	4	6	3	1	3	3	3	4	3
16	3	5	15	6	15	4	15		
17	2	4	3	5	3				
18	2	5	9	6	9				
19	3	3	7	4	7	6	7		
20	2	6	45	5	45				
21	2	5	25	6	25				
22	2	7	25	5	25				
23	3	5	10	6	10	4	10		
24	3	1	15	3	15	2	15		
25	3	1	15	3	15	6	15		
26	1	0	0						
27	3	1	9	6	9	5	9		
28	3	2	9	3	9	6	9		
29	3	1	35	3	35	6	35		
30	4	2	8	1	8	4	8	6	8
31	3	13	5	5	5	6	5		
32	3	2	30	4	30	13	30		
33	2	16	8	6	8				
34	2	5	12	6	12				
35	1	14	20						
36	3	10	30	11	30	7	30		
37	4	3	2	4	2	2	2	1	2
38	2	2	12	1	12				
39	1	0	0						
40	1	9	60						
41	2	1	35	3	70				
42	1	19	25						
43	2	18	25	6	50				
44	2	17	45	3	45				
45	2	20	15	13	30				

Fig. B-2 — Sample work unit input data

TYPE

2

0.0	1	1.0	1	*										
J.0	0	0.0115	1	0.0017	2	0.0141	3	0.0183	4	0.0206	5	0.0236	6	
J.0333	7	0.0370	8	0.0370	9	0.0419	10	0.0534	11	0.0682	12	0.1028	13	
J.1044	14	0.1108	15	0.1129	16	0.1178	17	0.1205	18	0.1246	19	0.1353	20	
J.1369	21	0.1407	22	0.1445	23	0.1537	24	0.1837	25	0.2038	26	0.2836	27	
J.2934	28	0.2987	29	0.3110	30	0.3644	31	0.4178	32	0.4576	33	0.4579	34	
J.4755	35	0.5333	36	0.5397	37	0.5515	38	0.5377	39	0.5896	40	0.5965	41	
J.6022	42	0.6132	43	0.6133	44	0.6271	45	0.6544	46	0.6591	47	0.6815	48	
J.6957	49	0.6983	50	0.6987	51	0.7018	52	0.7426	53	0.7458	54	0.7551	55	
J.7698	56	0.7782	57	0.7797	58	0.7838	59	0.7864	60	0.8153	61	0.8183	62	
J.8549	63	0.8567	64	0.8592	65	0.8727	66	0.8727	67	0.9033	68	0.9091	69	
J.9404	70	0.9411	71	0.9585	72	0.9611	73	0.9912	74	1.0000	75	*		
	*													
0.0	1	0.5	1	0.7	2	0.9	3	1.0	4	*				
J.0000	0	0.0118	18	0.0223	20	0.0229	45	0.302	46	0.309	47	0.316	48	
J.436	50	0.460	52	0.534	53	0.551	54	0.555	55	0.618	56	0.760	57	
J.811	58	0.822	59	0.870	61	0.881	63	0.896	67	0.950	68	0.956	71	
J.962	72	1.000	74											

Fig. B-3 — Sample data for the distribution of patients over each facility level and over each patient class for each type of patient

Field 3 and Field 4. A real number between 0.0 and 1.0, indicating the cumulative proportion of patients of that type entering the evacuation chain at the FEBA (level 1), followed by the integer 1 designating that level.

Field 5 and Field 6. A real number between 0.0 and 1.0, indicating the cumulative proportion of patients of that type entering the chain at facility level 2, followed by the integer 2.

Additional fields are included, as appropriate, to describe the entry levels of all patients of each type. In Figure B-3, for example, all the inpatients enter the baseline simulation at the FEBA, whereas the outpatients are distributed over the 4 levels in the proportions .5, .2, .2 and .1.

Remaining Fields The remaining data fields for each type of patient contain individual or cumulative probability distributions of patients of each type over the patient classes. This data consists of pairs of numbers: the first number is the probability, and must be a real number between 0 and 1; the second number represents the associated patient class. Figure B-3 contains cumulative probability distributions of inpatients and outpatients over the 75 classes employed in the baseline simulation.

PATIENT PRIORITY DATA GROUP

The patient priority data group describes the attributes associated with a given priority. It is identified by the word PRIORITY followed by the number of patient priorities. (This number must be equal to 4 at the present time.)

For each patient priority, the following data must be provided:

- The stabilization time in hours.
- The evacuation queue threshold time in hours.
- The additional treatment threshold time in minutes.

All these numbers are decimal numbers. In Figure B-4, for example, the stabilization time of a Priority 1 patient is 24 hours, there is no evacuation queue threshold time and the additional treatment threshold is 20 minutes.

PRIGRITY

```
4
24.  0.  20.
12.  1.  80.  Fig. B-4 -- Sample patient
0.   24. 1460.      priority data
0.   24. 1460.
```

ARRIVAL RATES DATA GROUP

This group of data specifies the average rates of arrivals for both inpatients and outpatients for each day of the simulation, preceded by the proportional distribution of these arrivals over each hour of the day. This section is identified by the word RATES and consists of the following elements:

- The proportion of inpatients arriving during each hour of the day. This consists of 24 real numbers, one for each hour of the day. The sum of these numbers must be equal to 1.0.
- The proportion of outpatients arriving during each hour of the day. This list should also consist of 24 real numbers adding up to 1.0.
- The number of days for which average patient arrival data is provided (length of combat period).
- The average number of inpatients for each day. This list consists of one real number for each day. There must be as many entries in the list as specified by the number of days field.
- The average number of outpatients for each day.

Figure B-5 shows a sample of patient arrival rates.

RATES										
.01	.01	.01	.01	.03	.05	.05	.07	.10	.07	
.05	.04	.04	.05	.07	.10	.07	.05	.05	.03	
.01	.01	.01	.01							
.0	.0	.0	.0	.0	.0	.05	.80	.05	.0	
.0	.0	.05	.0	.0	.05	.0	.0	.0	.0	
.0	.0	.0	.0							
15										
241.0	680.0	512.0	222.0	158.0	321.0	217.0	222.0			
92.0	255.0	348.0	168.0	60.0	65.0	54.0				
150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	
150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	

Fig. B-5 — Sample patient arrival data

CONFIGURATION DATA GROUP

The configuration data allows the user to easily specify the structure of the evacuation chain in the combat zone, to allocate the various resources at each facility level and to specify the evacuation rules to be used at each facility level. This data is entirely free-form and is keyword oriented. It contains the following information:

- A description of the type of evacuation vehicles assigned in the evacuation chain.
- A description of the default evacuation rules (if any) and evacuation vehicle speeds.
- A description of each treatment and evacuation level in the system together with the resources and parameters associated with a given level.
- A description of required operational inputs which control the simulation.
- Additional inputs which enable the user to select the type, level of detail and frequency of the outputs of the simulation.

The description of the types of evacuation vehicles assigned in the evacuation chain is identified by the keyword VEHICLES followed by an integer number specifying the number of different evacuation vehicle types. Each vehicle type is then identified by a name and by its mode of transportation, either AIR or GROUND.

The description of the default evacuation rules and vehicle speeds is identified by the keyword DEFAULTS. This block of data can be supplied when the evacuation rules or vehicle speeds are identical at each facility level. It provides the user with a concise way of specifying these characteristics of the system. Default rules or vehicle speeds can be overridden at a specific facility level. The input formats for these rules are described below under RULES.

The description of the treatment and evacuation levels present in the system is identified by the keyword LEVELS followed by an integer number specifying the number of levels in the chain. Then, for each level in the chain starting with the FEBA level and progressing toward the rear, the following information must be provided:

- The name of the level (e.g., FEBA, BAS, CS, etc...) This is an alphanumeric field of less than 10 characters chosen by the user. It is used in the model outputs to identify the level.
- The number of facility units at the given level. This must be an integer number. In addition at the present time the ratio of the number of facility units at a given level over the number of facility units at the level to its immediate rear must be a whole number (e.g., if there are 10 facility units at the BAS level, and if the next level to the rear is a CS level, the user must specify either 1, 2, 5 or 10 CS since those are the only numbers which divide exactly into 10).
- The remainder of the data describing a facility level is described using English like keywords. Each keyword identifies the attribute of the level and is followed by data which is a function of the keyword. The keywords can appear in any order and the description of a facility level is terminated by the keyword DONE. It should be noted that, at the present time, all the facility units within a facility level must be identical. The keywords to describe a facility level are:
 - o DISTANCE which specifies the distance between a level and the FEBA. The distance is an integer number which can be in any unit provided it is consistent with the vehicle speeds.
 - o BEDS which specifies the number of convalescent beds allocated at each unit within the level. It must be an integer number.
 - o EVAC which specifies the evacuation policy in force at the level. It must be an integer number of days.
 - o VEHICLES which specifies the number and type of vehicles assigned at each facility unit within the level. The input associated with this keyword consists of three fields:
 - The first field is the vehicle type which is the alphanumeric name of the vehicle as entered in the VEHICLES data.
 - The second field is the number of vehicles assigned at each facility unit within the level.

- The third field is the vehicle capacity (number of spaces aboard the vehicle).
- o TREATER which specifies the type and number of treaters assigned at each facility unit within the level. The input data describing the treater assignment consists of an arbitrarily long list of pairs of numbers. The first number is the treater code, the second number is the number of treaters of that type which are assigned. The treater codes must be consistent with those codes associated with the work unit data. The list of assigned treaters must be terminated with a \$.
- o LOAD which specifies the proportion of inpatients or outpatients which enter the system at this level. It contains the following data fields:
 - First, the word INPATIENT or OUTPATIENT to identify the type of patient.
 - Second, the proportion associated with this patient type. It must be expressed as a real number between 0.0 and 1.0. In addition, the sum of these numbers for each type of patient over all the levels must add up to 1.0.
 - The list is terminated with a \$.
- o SPEED which specifies the speed of the evacuation vehicles between this level and the next level to the rear. It contains the following data fields:
 - First, the vehicle type which is the alphanumeric name of the vehicle as entered in the VEHICLES data.
 - Second, the vehicle speed in any unit consistent with the distances.
- o SEC.FAC which specifies the patient classes which should be evacuated to this level, if possible. The list consists of a sequence of integer numbers each identifying a patient class. It is terminated by a \$. Patients of the specified classes will be evacuated to this facility provided they are coming from a facility closer to the FEBA. If they are already at or beyond their secondary facility, they will be evacuated to the next facility to the rear.

- o RULES which identifies the vehicle evacuation rules to be used at the facility. This group of data consists of a sequence of keywords identifying the type of rule and the rule itself within each type. It must be terminated by the word END.RULE.

Within each rule, the vehicle to which it applies is specified by following the rule name with the name of the vehicle. The rules which can be selected are the following:

 - REQUEST to indicate the levels from which a given vehicle can be requested. It consists of a sequence of facility level names and is terminated by a , and a \$.
 - LOAD.1 to indicate the rule to be used to load patients at a vehicle's first stop. It is followed by the rule number:
 - 1: Load none.
 - 2: Load all by priority.
 - 3: Load selected priorities (In this case the permitted priorities follow.).
 - DESTN.1 to indicate the destination of the vehicle after its first stop, based on its state (1 for empty, 2 for not empty). Following each state, the applicable rule can be specified as:
 - 1: User selected facility followed by the facility name or HOME.
 - 2: Remain at present facility.
 - 3: Closest facility to which any patient is designated to go.
 - 4: As far to the rear as required by any patient.
 - 5: Facility required by highest priority patient.

- UNLOAD.1 to indicate the rule to be followed to unload patients at vehicle's second stop (a vehicle always arrives empty at its first stop):

- 1: Unload none.
- 2: Unload all.
- 3: Unload patients designated for evacuation to this facility.
- 4: Unload designated priorities.

- LOAD.2 to indicate the rule to be followed for patient loading at a vehicle's second stop. It is based on the following states:

- 1: vehicle empty and other vehicle enroute
- 2: vehicle empty and no other vehicle enroute
- 3: vehicle not empty and other vehicle enroute
- 4: vehicle not empty and no other vehicle enroute

The applicable rules include those of LOAD.1 plus a fourth rule:

- 4: Load those designated to go to facilities which are the destinations of patients already on board.

- DESTN.2 to indicate the rule to be followed for dispatching a vehicle after its second stop. The inputs are similar to the DESTN.1 rules.

- UNLOAD.2 to indicate the rule to be followed to unload patients at a vehicle's third or subsequent stops. The inputs are similar to the UNLOAD.1 rule.

The operational inputs which must be provided for a simulation are also identified by keywords. They are identified by the keyword OPERATION and can be presented in any order; the list must be terminated by the word DONE. They are:

- o DAYS to specify the number of days of simulation. It must be an integer number.

- o DAWN and DUSK to specify the range of daylight hours. Each time must be input as a real number using military clock hours, not A.M. or P.M.
- o AIR.TRIG and GRND.TRIG to specify the number of non-urgent patients which trigger a request for an air vehicle or a ground vehicle.
- o CONV to specify the multiplicative factor by which convalescent time is increased for patients who do not receive their critical convalescent work unit within the allowable delay time.
- o POOL to specify the distance of the POOL to the FEBA and the type of evacuation vehicles assigned at the pool. The input fields associated with this keyword are identical to those for the VEHICLES keyword.

The additional input elements are used to control the type of statistics to be produced by the model, the printing frequency of these statistics, etc... They are:

- o ECHO to provide a listing of the medical and configuration input data (See input reports.).
- o FREQUENCY to specify the printing frequency of the statistics in days.
- o RUN.NO to identify the run, the run number is printed at the top of every page.

Figures B-6 and B-7 present the sample configuration data for the baseline simulation. In this example, there are four levels of evacuation called, respectively, FEBA, BAS, CS and HOSP. The FEBA has 36 landing zones with 10 medics at each landing zone; there are 9 BAS, 3 miles from the FEBA; each BAS has 1 ambulance with a capacity of 8 and a speed of 25 miles/hour; there are no beds or evacuation policy at the BAS; there are 2 treaters of type 3, 15 treaters of type 5, etc....The CS and the HOSP are described in the same manner. The simulation will run for 15 days, daylight hours are from 0600 to 1800, 6 non-urgent patients will trigger an air vehicle and 2 a ground vehicle. The convalescent time of patients will be doubled for patients who do not receive their critical convalescent work unit in the required time. The MEDEVAC pool has 16 helicopters with a capacity of 24. The speed of the helicopters and ambulances is 100 mph and 25 mph, respectively.

Figure B-8 is a sample format for use by the model user in providing configuration data. The data shown is for the clearing station level (level 3) of the baseline simulation.

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 NAMES II (NAVY AMPHIBIOUS MEDICAL EVACUATION SIMULATION) USER'S--ETC(U)
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END
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VEHICLES 2
 HELICOPTER AIR
 AMBULANCE GROUND
 DEFAULTS
 RULES
 REQUEST HELICOPTER POOL , ;
 LOAD.1 AMBULANCE 2 , ;
 HELICOPTER 2 , ;
 DESTN.1 AMBULANCE 1 1 HOME , ;
 2 3 , ;
 HELICOPTER 1 1 HOME , ;
 2 3 , ;
 UNLOAD.1 AMBULANCE 3 , ;
 HELICOPTER 3 , ;
 LOAD.2 AMBULANCE 1 2 , ;
 2 2 , ;
 3 2 , ;
 4 2 , ;
 HELICOPTER 1 2 , ;
 2 2 , ;
 3 2 , ;
 4 2 , ;
 DESTN.2 AMBULANCE 1 1 HOME , ;
 2 3 , ;
 HELICOPTER 1 1 HOME , ;
 2 3 , ;
 UNLOAD.2 AMBULANCE 3 , ;
 HELICOPTER 3 , ;
 END.RULE
 SPEED HELICOPTER 100
 AMBULANCE 25 ;
 DONE
 LEVELS 4
 PERA 36
 LOAD INPATIENT 1.0
 OUTPATIENT 0.5 ;
 TREATERS 0 10 ;
 RULES
 REQUEST AMBULANCE PAS CS HOSP , ;
 END.RULE
 DONE
 PAS 9
 DISTANCE 3
 VEHICLES AMBULANCE 1 8 ;
 LOAD OUTPATIENT 0.2 ;
 TREATERS 3 2 5 15 5 6 15 1 ;
 SEC.FAC 4 5 6 9 11 13 17 20 24
 26 32 41 42 45 46 48 54 57 58 59
 61 63 64 67 ;
 RULES
 REQUEST AMBULANCE PAS CS HOSP , ;
 END.RULE
 DONE

Fig. B-6 — Sample configuration data for baseline simulation

CS 3
 DISTANCE 12
 VEHICLES AMBULANCE 3 8 2
 LOAD OUTPATIENT 0.2 3
 BEDS 60
 EVAC 3
 TREATERS 1 2 2 2 3 2 5 12 6 10 7 4 13 2
 15 4 16 2 19 4 2
 SEC.FAC 30 34 51 52 53 50 52 63 70 73 74
 5
 RULES
 REQUEST AMBULANCE CS HOSP , S
 END RULE
 DONE :
 HOSP 1
 DISTANCE 30
 VEHICLES AMBULANCE 6 8 3
 LOAD OUTPATIENT 0.1 3
 BEDS 200
 EVAC 15
 TREATERS 1 2 2 19 3 6 4 26 5 27 6 15
 7 3 9 1 10 1 11 1 13 3 14 1
 15 6 16 3 17 1 18 11 19 3 20 1 5
 SEC.FAC 1 2 3 7 3 10 12 14 15 16 18
 19 21 22 23 25 27 28 29 31 33 35
 36 37 38 39 40 43 44 47 49 50 55
 56 65 66 69 71 72 75 5
 DONE
 OPERATION
 DAYS 15
 DAWN 6.
 DUSK 19.
 AIR.TRIG 6
 GRND.TRIG 2
 CONV 2.
 POOL 30
 HELICOPTER 16 24 5
 DONE
 OUTPUT
 FREQUENCY 1.0
 RUN.NO II-39
 DONE

Fig. B-7 — Sample configuration data for baseline simulation

APPENDIX C

COMPUTER REPORTS OF
NAMES II BASELINE SIMULATION
INPUTS

===== INPUT DATA =====

	CLASS																											
	75																											
	1	1	1	1	5	181	1	4	40	12	6	17	3	15	33	14	41	C	M	F	42	11	13	5	6			
4.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	C	M	F	42	11	13	5	6			
5.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0	0	0	42	11	13	5	6			
6.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0095	4	0095	5	0112	6	0138	7			
7.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0250	11	0250	12	0267	13	0331	14			
8.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0319	17	0319	18	0362	19	0396	20			
9.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0361	24	0361	25	0398	27	0523	28			
10.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0568	31	0568	32	0577	33	0594	34			
11.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0646	36	0646	37	0672	38	0693	40			
12.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0749	43	0749	44	0784	45	0953	46			
13.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	0913	50	0913	51	0956	52	1065	53			
14.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	1120	57	1120	58	1151	59	1190	60			
15.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	1190	60	1.0000	61	*						
16.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	WU	6	6	33	9	42	C	M	F		
17.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	1234	8	1234	9	1317	10	1476	11			
18.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	1473	8	1473	9	1492	10	1532	11			
19.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	1746	15	1905	16	2153	17	2363	18			
20.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	2143	22	2222	23	2222	24	2302	25			
21.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	2540	29	2540	30	2519	31	2557	32			
22.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	3175	35	3175	37	3254	38	3254	39			
23.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	3651	43	3651	44	3651	45	3651	46			
24.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	3889	50	3889	51	3889	52	3889	53			
25.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	4148	57	4148	58	4148	59	4127	60			
26.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	3	1	1	1	1	1	1	1			
27.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	WU	11	6	9	15	33	14	41	C	M	F
28.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	1611	1	1156	2	1538	3	2138	4			
29.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	3298	7	3663	8	3852	9	4075	10			
30.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	4447	14	5159	15	5371	16	5583	17			
31.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	6121	21	6134	22	6312	23	6413	24			
32.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	6867	28	6938	29	7004	30	7055	31			
33.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	7279	35	7314	36	7337	37	7379	38			
34.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	7597	42	7537	43	7539	44	7621	45			
35.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	7713	49	7713	50	7762	51	7839	52			
36.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	7915	56	7951	57	8021	58	8057	59			
37.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	4	2	1	721	6	2	2				
38.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	WU	5	6	12	37	29	C	M	F		
39.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	2139	1	3434	2	4317	3	4818	4			
40.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	5317	7	6228	8	6535	9	6713	10			
41.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	7110	14	7242	15	7370	16	7465	17			
42.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	7647	21	7716	22	7803	23	7829	24			
43.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	7957	28	7993	29	8019	30	8176	31			
44.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	8213	35	8227	36	8253	37	8247	38			
45.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	8374	42	8400	43	8417	44	8452	45			
46.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	8555	49	8581	50	8607	51	8642	52			
47.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	8676	55	8685	57	8712	58	8712	59			
48.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	9	1383	10	1383	11	1143	12				
49.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	2435	16	2642	17	2953	18	3161	19			
50.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	3679	23	3938	24	4141	25	4133	26			
51.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	4560	30	4611	31	4767	32	4870	33			
52.	1.	1.	1.	1.	5	181	1	4	10	12	6	17	3	15	33	14	41	4560	30	4611	31	4767	32	4870	34			

53 . .5130 37 .5181 38 .5233 39 .5285 40 .5440 41 .5544 42 .5544 43
 54 . .5536 44 .5596 45 .5596 46 .5644 47 .5648 48 .5751 49 .5751 50
 55 . .5751 51 .5913 52 .5917 53 .5907 54 .5959 55 .6113 56 .6114 57
 56 . .6114 58 .6218 59 .6321 60 1.0000 61 *
 57 . 6 3 1. 1 1440 12 2
 58 . WU 5 6 33 43 0 4 F 5 6
 59 . 1. 3314 1 .5927 2 .7251 3 .7894 4 .8550 5 .9316 6
 60 . .9395 7 .9746 8 .9912 9 1.0000 10 *
 61 . 7 1 1. 30 180 1 4
 62 . WU 11 6 9 15 12 33 41 0 4 F 42 13 11 5 6
 63 . 1. 61 1.0000 61 *
 64 . 9 1 1. 5 360 3 4
 65 . WU 11 6 17 33 41 0 4 F 42 13 33 11 9 5 6
 66 . 1. 0 .0355 1 .0520 2 .0345 3 .1196 4 .1492 5 .1758 6
 67 . .1965 7 .2231 8 .2482 9 .2713 10 .2939 11 .3176 12 .3319 13
 68 . .3516 14 .3737 15 .3946 16 .4077 17 .4165 18 .4239 19 .4402 20
 69 . .4535 21 .4579 22 .4742 23 .4919 24 .5126 25 .5214 26 .5229 27
 70 . .5284 28 .5347 29 .5352 30 .5421 31 .5583 32 .5716 33 .5879 34
 71 . .6141 35 .6113 36 .6214 37 .6317 38 .6443 39 .6589 40 .6736 41
 72 . .6413 42 .7051 43 .7242 44 .7385 45 .7533 46 .7666 47 .7755 48
 73 . .7324 49 .7975 50 .8055 51 .8242 52 .8360 53 .8526 54 .8799 55
 74 . .8951 56 .9184 57 .9247 58 .9334 59 .9498 60 1.0000 61 *
 75 . 9 3 1.00 0 1440 12 2
 76 . WU 4 33 9 10 0 4 F 5
 77 . 1. 0 .0210 1 .0380 2 .0750 3 .0920 4 .1230 5 .1540 6
 78 . .1610 7 .1680 8 .1920 9 .2290 10 .2410 11 .2500 12 .2610 13
 79 . .2710 14 .2810 15 .2930 16 .2910 17 .3050 18 .3220 19 .3320 20
 80 . .3420 21 .3460 22 .3530 23 .3531 24 .3710 25 .3840 26 .3940 27
 81 . .4140 29 .4210 29 .4320 30 .4350 31 .4420 32 .4420 33 .4450 34
 82 . .4520 35 .4660 36 .4690 37 .4730 38 .4830 39 .4900 40 .4970 41
 83 . .5173 42 .5171 43 .5270 44 .5310 45 .5410 46 .5550 47 .5620 48
 84 . .5790 49 .5920 50 .6130 51 .6150 52 .6230 53 .6230 54 .6270 55
 85 . .6440 55 .6470 57 .6540 58 .6610 59 .6750 60 1.0000 61 *
 86 . 10 1 1. 30 180 1 4
 87 . WU 12 5 15 12 33 41 0 4 F 42 43 13 13 11 5 6
 88 . 1. 9 .0750 10 .1445 11 .1895 12 .2514 13 .3002 14 .3358 15
 89 . .3612 15 .3921 17 .4155 18 .4353 19 .4484 20 .4693 21 .4813 22
 90 . .4491 23 .5159 24 .5328 25 .5461 26 .5478 27 .5591 28 .5722 29
 91 . .5435 30 .5929 31 .6079 32 .6210 33 .6285 34 .6323 35 .6417 36
 92 . .6442 37 .6510 38 .6504 39 .6717 40 .6811 41 .6829 42 .6867 43
 93 . .6857 44 .6923 45 .6942 46 .6979 47 .6979 48 .6998 49 .7317 50
 94 . .7129 51 .7143 52 .7186 53 .7242 54 .7293 55 .7373 56 .7392 57
 95 . .7392 58 .7411 59 .7430 60 1.0000 61 *
 96 . 11 2 1.00 5 360 3 2
 97 . WU 5 17 33 41 0 4 F 11 5
 98 . 1. 2512 1 .4297 2 .5458 3 .6395 4 .7384 5 .8327 6
 99 . .3928 7 .9460 8 .9848 9 1.0000 10 *
 100 . 12 2 1. 1 180 1 4
 101 . WU 10 6 9 12 33 41 0 4 F 42 11 13 5 6
 102 . 1. 46 .1113 47 .1179 48 .1357 49 .1510 50 .1712 51 .1842 52
 103 . .3942 53 .1173 54 .1237 55 .1413 56 .1505 57 .1645 58 .1824 59
 104 . .1939 60 1.0000 61 *
 105 . 13 3 1.00 1 720 5 2
 106 . WU 6 9 33 29 0 4 F 11 13 5
 107 . 1. 3845 1 .4397 2 .4953 3 .2476 4 .3234 5 .3518 6

139 .	.3884	7	.4218	8	.4527	9	.4446	10	.5121	11	.5271	12	.5579	13
140 .	.5518	14	.6048	15	.6344	16	.6552	17	.6817	18	.7134	19	.7255	20
141 .	.7444	21	.7541	22	.7848	23	.8123	24	.8135	25	.8221	26	.8332	27
142 .	.8433	28	.8543	29	.8645	30	.8767	31	.8905	32	.8981	33	.9051	34
143 .	.9156	35	.9235	36	.9314	37	.9379	38	.9431	39	.9474	40	.9575	41
144 .	.9617	42	.9681	43	.9732	44	.9846	45	.9931	46	1.0000	47	*	
145 .	14	1 0.	0	723	6	4								
146 .	HU	7	6	9	35 C M F	11	34	5	6					
147 .	J.	60	1.0000	61	*									
148 .	15	2	1.00	J	723	6	4							
149 .	HU	5	9	35 C M F	11	38	5							
150 .	J.	3	.3865	1	.1596	2	.1956	3	.2411	4	.2759	5	.3318	6
151 .	.3238	7	.3419	8	.3557	9	.3678	10	.3767	11	.3844	12	.3932	13
152 .	.3991	14	.4042	15	.4075	16	.4157	17	.4218	18	.4262	19	.4295	20
153 .	.4345	21	.4361	22	.4393	23	.4411	24	.4422	25	.4446	26	.4482	27
154 .	.4493	28	.4515	29	.4526	30	.4543	31	.4559	32	.4571	33	.4598	34
155 .	.4539	35	.4644	36	.4686	37	.4713	38	.4714	39	.4741	40	.4747	41
156 .	.4769	42	.4780	43	.4817	44	.4824	45	.4873	46	.4995	47	.4917	48
157 .	.4923	49	.4956	50	.4967	51	.5003	52	.5011	53	.5022	54	.5033	55
158 .	.5151	56	.5183	57	.5127	58	.5154	59	.5165	60	1.0000	61	*	
159 .	16	2	J.	5	123	1	4							
160 .	HU	13	6	17	9	15	41 C M F	42	11	13	5	6		
161 .	J.	26	.0219	27	.0395	28	.0702	29	.1039	30	.1184	31	.1272	32
162 .	.1447	33	.1711	34	.1886	35	.1974	36	.2193	37	.2281	38	.2511	39
163 .	.2575	41	.2675	41	.2807	42	.2942	43	.3114	44	.3114	45	.3158	46
164 .	.3212	47	.3246	48	.3553	49	.3643	50	.3960	51	.4123	52	.4299	53
165 .	.4786	54	.4473	55	.4518	56	.4615	57	.4649	58	.4649	59	.4693	60
166 .	1.0000	61	*											
167 .	17	3	1.00	J	723	6	2							
168 .	HU	5	9	29 C M F	11	11	5							
169 .	J.	0	.1000	1	.1839	2	.2532	3	.3371	4	.4348	5	.4597	6
170 .	.5226	7	.5935	8	.6435	9	.6571	10	.7177	11	.7468	12	.7742	13
171 .	.8316	14	.8213	15	.8532	16	.8742	17	.9032	18	.9177	19	.9339	20
172 .	.9484	21	.9541	22	.9694	23	.9823	24	.9855	25	1.0000	26	*	
173 .	18	3	1.00	0	1440	12	4							
174 .	HU	4	8	35 C M F	38	5								
175 .	J.	0	.1455	1	.2817	2	.4143	3	.5015	4	.5719	5	.6333	6
176 .	.6886	7	.7231	8	.7451	9	.7692	10	.7859	11	.8137	12	.8139	13
177 .	.8211	14	.8341	15	.8415	16	.8443	17	.8489	18	.8545	19	.8573	20
178 .	.8510	21	.8614	22	.8556	23	.8584	24	.8693	25	.8713	26	.8721	27
179 .	.8753	28	.8777	29	.8777	30	.8793	31	.8795	32	.8795	33	.8842	34
180 .	.8863	35	.8869	36	.8879	37	.8897	38	.8897	39	.8925	40	.8953	41
181 .	.8990	42	.8999	43	.9018	44	.9127	45	.9045	46	.9145	47	.9152	48
182 .	.9101	49	.9120	50	.9147	51	.9147	52	.9144	53	.9134	54	.9222	55
183 .	.9231	56	.9241	57	.9249	58	.9254	59	.9264	60	1.0000	61	*	
184 .	19	3	1.00	J	3	12	4							
185 .	HU	2	35 C	5										
186 .	J.	0	.0829	1	.1261	2	.2018	3	.2721	4	.3351	5	.3838	6
187 .	.4372	7	.4396	8	.4567	9	.4865	10	.5027	11	.5189	12	.5333	13
188 .	.5445	14	.5551	15	.5622	16	.5558	17	.5756	18	.5838	19	.5874	20
189 .	.5911	21	.5911	22	.5942	23	.6154	24	.6154	25	.6134	26	.6126	27
190 .	.6152	28	.6142	29	.6306	30	.6342	31	.6396	32	.6395	33	.6432	34
191 .	.6468	35	.6468	36	.6486	37	.6541	38	.6559	39	.6577	40	.6631	41
192 .	.6631	42	.6631	43	.6703	44	.6703	45	.6721	46	.6757	47	.6793	48
193 .	.6811	49	.6811	50	.6811	51	.6829	52	.6865	53	.6937	54	.6955	55

153 .	.6955 56	.7027 57	.7045 58	.7081 59	.7199 61	1.0000 61 *	
154 .	20 3 1.00 0	0 12 2					
155 .	HU 2 8 C 5						
156 .	.0007 1	.1157 1	.2017 2	.2721 3	.3275 4	.3712 5	.4126 6
157 .	.4428 7	.4664 8	.4919 9	.5104 10	.5239 11	.5427 12	.5572 13
158 .	.5719 14	.5804 15	.5978 16	.5989 17	.6113 18	.6187 19	.6274 20
159 .	.6345 21	.6412 22	.6459 23	.6547 24	.6601 25	.6644 26	.6728 27
171 .	.6739 24	.6896 29	.6940 33	.6987 31	.7231 32	.7378 33	.7109 34
172 .	.7142 35	.7229 36	.7236 37	.7337 38	.7381 39	.7431 40	.7471 41
173 .	.7515 42	.7552 43	.7516 44	.7623 45	.7653 46	.7697 47	.7727 48
174 .	.7757 49	.7814 50	.7855 51	.7873 52	.7912 53	.7966 54	.7999 55
175 .	.8157 56	.8117 57	.8141 58	.8191 59	.8194 61	1.0000 61 *	
176 .	21 3 1.00 3	3 36 4					
177 .	HU 3 7 40 C 5						
178 .	0. 0	.3207 1	.4620 2	.5655 3	.6442 4	.7011 5	.7552 6
179 .	.7922 7	.8178 8	.8435 9	.8643 11	.8795 11	.8939 12	.8985 13
180 .	.9023 14	.9042 15	.9118 16	.9146 17	.9203 18	.9231 19	.9279 20
181 .	.9288 21	.9325 22	.9336 23	.9355 24	.9364 25	.9383 26	.9402 27
182 .	.9421 24	.9440 29	.9478 32	.9479 31	.9478 32	.9489 33	.9497 34
183 .	.9517 35	.9517 36	.9516 37	.9535 38	.9545 39	.9545 41	.9564 41
184 .	.9554 42	.9543 43	.9532 44	.9592 45	.9592 46	.9602 47	.9602 48
185 .	.9602 49	.9602 50	.9612 51	.9621 52	.9639 53	.9639 54	.9639 55
186 .	.9639 56	.9649 57	.9649 58	.9649 59	.9649 60	1.0000 61 *	
187 .	22 2 3. 3 181 1	4					
188 .	HU 11 6 33 9 12 41 C M F 43 11 10 13 5 6						
189 .	J. 60 1.0000 61 *						
190 .	23 3 3. 3 181 1	4					
191 .	HU 11 6 33 9 12 41 C M F 43 11 10 13 5 6						
192 .	.0003 1	.0037 1	.0083 2	.0171 3	.0233 4	.0311 5	.0363 6
193 .	.0433 7	.0543 8	.0639 9	.0693 11	.0773 11	.0843 12	.0896 13
194 .	.0952 14	.1012 15	.1092 16	.1146 17	.1172 18	.1222 19	.1265 20
195 .	.1299 21	.1349 22	.1405 23	.1449 24	.1512 25	.1562 26	.1638 27
196 .	.1635 28	.1732 29	.1818 33	.1911 31	.1951 32	.2131 33	.2151 34
197 .	.2041 35	.2151 36	.2241 37	.2281 38	.2321 39	.2368 41	.2384 41
198 .	.2544 42	.2504 43	.2554 44	.2611 45	.2647 46	.2717 47	.2731 48
199 .	.2854 49	.2910 50	.2944 51	.3070 52	.3107 53	.3207 54	.3260 55
200 .	.3317 56	.3400 57	.3473 58	.3593 59	.3686 61	1.0000 61 *	
201 .	24 3 1.00 3	3 72 2					
202 .	HU 6 33 9 11 10 C 8 5						
203 .	0. 0 .0618 1	.1137 2	.1745 3	.2059 4	.2225 5	.2441 6	
204 .	.2588 7	.2686 8	.2734 9	.2843 10	.2902 11	.3010 12	.3049 13
205 .	.3088 14	.3137 15	.3176 16	.3235 17	.3275 18	.3333 19	.3382 20
206 .	.3412 21	.3412 22	.3441 23	.3451 24	.3461 25	.3441 26	.3559 27
207 .	.3588 28	.3618 29	.3676 30	.3706 31	.3745 32	.3775 33	.3843 34
208 .	.3853 35	.3932 36	.3912 37	.3961 38	.4020 39	.4043 40	.4073 41
209 .	.4094 42	.4147 43	.4216 44	.4255 45	.4275 46	.4334 47	.4343 48
210 .	.4373 49	.4412 51	.4451 51	.4521 52	.4573 53	.4657 54	.4736 55
211 .	.4765 56	.4794 57	.4943 58	.4902 59	.4941 60	1.0000 61 *	
212 .	25 2 53 3 363 3	4					
213 .	HU 9 6 33 9 41 C M F 43 11 10 13 5						
214 .	J. 60 1.0000 61 *						
215 .	26 3 1.00 3 720 6 2						
216 .	HU 6 33 9 29 C M F 11 3 5						
217 .	0. 0 .0701 1	.1213 2	.1731 3	.2260 4	.2741 5	.3154 6	
	.3464 7 .3732 8	.3995 9	.4233 10	.4451 11	.4682 12	.4933 13	

213 .	.5176 14	.5331 15	.5629 16	.5825 17	.6028 18	.6205 19	.6399 20
213 .	.6551 21	.6692 22	.6818 23	.6946 24	.7053 25	.7169 26	.7282 27
220 .	.7379 29	.7473 29	.7564 31	.7655 31	.7731 32	.7799 33	.7857 34
221 .	.7931 35	.7988 36	.8044 37	.8111 38	.8168 39	.8229 40	.8284 41
222 .	.8334 42	.8376 43	.8430 44	.8469 45	.8510 46	.8561 47	.8607 48
223 .	.8551 49	.8683 50	.8718 51	.8761 52	.8815 53	.8844 54	.8893 55
224 .	.8925 56	.8969 57	.9015 58	.9048 59	.9044 60	1.0000 61	*
225 .	27 1 1.	3 181 1	4				
226 .	40 13 6 33	9 14 27	41 C M F	43 11 10 13 38	5 6		
227 .							
228 .	1.	60 1.0000 61 *					
229 .	28 1 0.	3 181 1	4				
230 .	40 13 6 33	9 14 27	41 C M F	43 11 10 13 38	5 6		
231 .							
232 .	0.	.0007 1	.0022 2	.0047 3	.0072 4	.0093 5	.0113 6
233 .	.0134 7	.0171 8	.0211 9	.0247 10	.0268 11	.0306 12	.0337 13
234 .	.0365 14	.0389 15	.0416 16	.0452 17	.0499 18	.0535 19	.0562 20
235 .	.0592 21	.0621 22	.0650 23	.0693 24	.0718 25	.0765 26	.0783 27
236 .	.0826 28	.0892 29	.0918 30	.0954 31	.0994 32	.1033 33	.1071 34
237 .	.1111 35	.1176 36	.1156 37	.1199 38	.1235 39	.1271 40	.1339 41
238 .	.1779 42	.1471 43	.1474 44	.1515 45	.1593 46	.1631 47	.1593 48
239 .	.1735 49	.1743 50	.1829 51	.1911 52	.1951 53	.2016 54	.2081 55
240 .	.2144 56	.2205 57	.2254 58	.2315 59	.2355 60	1.0000 61	*
241 .	29 1 1.	3 241 2	4				
242 .	40 13 6 33	9 14 27	41 C M F	43 11 10 13 38	5 6		
243 .							
244 .	1.	60 1.0000 61 *					
245 .	30 2 0.	0 480 4	3				
246 .	40 14 6 33	9 14 27	41 C M F	43 11 10 22 13 38	5		
247 .	6						
248 .	1.	.7446 1	.1856 2	.1371 3	.1745 4	.2154 5	.2231 6
249 .	.2344 7	.2421 8	.2474 9	.2539 10	.2598 11	.2638 12	.2690 13
250 .	.2736 14	.2769 15	.2808 16	.2861 17	.2974 18	.2894 19	.2920 20
251 .	.2927 21	.2940 22	.2956 23	.2972 24	.2999 25	.3005 26	.3012 27
252 .	.3331 28	.3045 29	.3034 30	.3114 31	.3117 32	.3135 33	.3182 34
253 .	.3212 35	.3215 36	.3241 37	.3294 38	.3301 39	.3323 40	.3327 41
254 .	.3332 42	.3332 43	.3438 44	.3451 45	.3504 46	.3543 47	.3589 48
255 .	.3639 49	.3622 50	.3642 51	.3675 52	.3734 53	.3766 54	.3786 55
256 .	.3819 56	.3845 57	.3871 58	.3924 59	.3953 60	1.0000 61	*
257 .	31 1 1.	3 361 3	4				
258 .	40 13 6 33	9 12 41 C M F	43 11 13 5 6				
259 .	0.	.0016 21	.1274 22	.1531 23	.1772 24	.1974 25	.1185 26
260 .	.1375 27	.1561 28	.1735 29	.1907 30	.2057 31	.2254 32	.2339 33
261 .	.2551 34	.2731 35	.2822 36	.2951 37	.3185 38	.3195 39	.3316 40
262 .	.3610 41	.3533 42	.3639 43	.3733 44	.3853 45	.3917 46	.4020 47
263 .	.4074 48	.4171 49	.4238 50	.4325 51	.4415 52	.4510 53	.4571 54
264 .	.4627 55	.4738 56	.4790 57	.4866 58	.4938 59	.4987 60	1.0000 61
265 .							
266 .	32 3 1.00	3 721 6 2					
267 .	40 5 73 9	.29 C M F	11 13 5				
268 .	1.	.0855 1	.1712 2	.2455 3	.3214 4	.3935 5	.4556 6
269 .	.5089 7	.5549 8	.5956 9	.6324 10	.6626 11	.6954 12	.7312 13
270 .	.7740 14	.8138 15	.8457 16	.8823 17	.9149 18	.9454 19	.9740 20
271 .	1.0000 21	*					
272 .	33 2 0.	3 241 2	4				

273 .	WU	11	6	73	9	27	28	41	C	H	F	10	13	3	5	6		
274 .	J.	1	.3856	1	.1823	2	.2525	3	.2971	4	.3275	5	.3538	6				
275 .	.3672	7	.3823	8	.3925	9	.4022	10	.4067	11	.4145	12	.4199	13				
276 .	.4249	14	.44313	15	.4357	16	.4391	17	.4421	18	.4455	19	.4486	20				
277 .	.4513	21	.4545	22	.4579	23	.4634	24	.4634	25	.4655	26	.4676	27				
278 .	.4635	28	.4713	29	.4734	30	.4752	31	.4778	32	.4811	33	.4827	34				
279 .	.4851	35	.4867	36	.4844	37	.4905	38	.4923	39	.4943	40	.4963	41				
280 .	.4939	42	.5024	43	.5152	44	.5051	45	.5132	46	.5108	47	.5125	48				
281 .	.5143	49	.5168	50	.5144	51	.5222	52	.5244	53	.5271	54	.5299	55				
282 .	.5322	56	.5350	57	.5341	58	.5434	59	.5442	60	1.0000	61	*					
283 .	34	3	1.00	3	3	72	3											
284 .	WU	6	33	44	45	8	0	34	5									
285 .	J.	1	.2443	1	.1049	2	.1608	3	.1888	4	.2517	5	.2657	6				
286 .	.2227	7	.2797	8	.3117	9	.3077	10	.3147	11	.3237	12	.3497	13				
287 .	.3636	14	.3716	15	.3446	16	.3916	17	.3916	18	.4126	19	.4126	20				
288 .	.4126	21	.4196	22	.4246	23	.4266	24	.4416	25	.4476	26	.4476	27				
289 .	.4545	28	.4545	29	.4755	30	.4755	31	.4755	32	.4925	33	.4825	34				
290 .	.4825	35	.4835	36	.4955	37	.5035	38	.5135	39	.5245	40	.5315	41				
291 .	.5315	42	.5315	43	.5455	44	.5455	45	.5455	46	.5534	47	.5564	48				
292 .	.5654	49	.5664	50	.5734	51	.5734	52	.5734	53	.5734	54	.5804	55				
293 .	.6014	56	.6184	57	.6154	58	.6154	59	.6154	60	1.0000	61	*					
294 .	35	3	1.00	3	3	72	+											
295 .	WU	6	33	44	45	8	0	34	5									
296 .	J.	1	.3919	1	.1856	2	.2692	3	.3277	4	.3749	5	.4124	6				
297 .	.4441	7	.4644	8	.4856	9	.5123	10	.5154	11	.5238	12	.5375	13				
298 .	.5466	14	.5540	15	.5645	16	.5712	17	.5773	18	.5824	19	.5883	20				
299 .	.5927	21	.5973	22	.6033	23	.6074	24	.6113	25	.6162	26	.6210	27				
300 .	.6255	28	.6311	29	.6352	30	.6388	31	.6439	32	.6472	33	.6495	34				
301 .	.6536	35	.6533	36	.6616	37	.6651	38	.6689	39	.6723	40	.6756	41				
302 .	.6814	42	.6857	43	.6911	44	.6939	45	.6933	46	.7019	47	.7055	48				
303 .	.7348	49	.7142	50	.7193	51	.7226	52	.7262	53	.7299	54	.7325	55				
304 .	.7351	56	.7412	57	.7448	58	.7498	59	.7539	60	1.0000	61	*					
305 .	36	1	0.	3	180	1	4											
306 .	WU	13	6	17	16	41	C	H	F	43	11	30	13	33	31	9	5	6
307 .	0.	5	.1069	6	.0247	7	.0410	8	.0559	9	.1645	10	.3824	11				
308 .	.1392	12	.1167	13	.1352	14	.1561	15	.1733	16	.1904	17	.2073	18				
309 .	.2237	19	.2478	20	.2548	21	.2753	22	.2931	23	.3145	24	.3231	25				
310 .	.3379	26	.3513	27	.3616	28	.3732	29	.3455	30	.3346	31	.4058	32				
311 .	.4120	33	.4254	34	.4356	35	.4452	36	.4543	37	.4634	38	.4719	39				
312 .	.4815	41	.4893	41	.4957	42	.5134	43	.5114	44	.5140	45	.5237	46				
313 .	.5310	47	.5384	48	.5441	49	.5500	50	.5560	51	.5632	52	.5736	53				
314 .	.5773	54	.5826	55	.5899	56	.5955	57	.6122	58	.6186	59	.6137	60				
315 .	1.0000	61	*															
316 .	37	1	0.	5	160	3	4											
317 .	WU	10	6	17	41	C	H	F	43	11	30	33	9	5	6			
318 .	J.	1	.1634	1	.3538	2	.4977	3	.6798	4	.8835	5	1.0000	6				
319 .	*																	
320 .	38	1	0.	5	180	1	+											
321 .	WU	15	6	17	15	14	41	C	H	F	33	42	11	30	13	9	5	6
322 .	J.	1	.1031	1	.1337	2	.1446	3	.1942	4	.2513	5	.2835	6				
323 .	.3233	7	.3519	8	.3737	9	.3949	10	.4249	11	.4533	12	.4907	13				
324 .	.5215	14	.5457	15	.5743	16	.5987	17	.6231	18	.6377	19	.6523	20				
325 .	.6694	21	.6837	22	.6921	23	.6986	24	.7043	25	.7173	26	.7262	27				

324 .	.7335 24	.7425 29	.7539 30	.7620 31	.7669 32	.7734 33	.7782 34
325 .	.7823 35	.7846 36	.7920 37	.7937 38	.8110 39	.8153 40	.8137 41
330 .	.8156 42	.8213 43	.8236 44	.8335 45	.8343 46	.8367 47	.8438 48
331 .	.8424 49	.8457 50	.8465 51	.8465 52	.8489 53	.8546 54	.8562 55
332 .	.8547 56	.8547 57	.8611 58	.8663 59	.8692 60	1.0000 61	*
333 .	39 1 0	0 180	1 4				
334 .	WU 11 6	+1 C 4 F	30 33	28 44	43 11	13 9	6
335 .	1 1 1	.3318 2	.3657 3	.1037 4	.1348 5	.1544 6	.1843 7
336 .	.2144 4	.2346 9	.2492 11	.2696 11	.2870 12	.3138 13	.3274 14
337 .	.3503 15	.3874 16	.3947 17	.4014 13	.4194 19	.4340 20	.4480 21
338 .	.4583 22	.4714 23	.4816 24	.4915 25	.5016 26	.5134 27	.5187 28
339 .	.5291 29	.5395 30	.5513 31	.5624 32	.5697 33	.5742 34	.5821 35
340 .	.5897 35	.5948 37	.6018 34	.6088 39	.6140 41	.6199 41	.6248 42
341 .	.6294 43	.6342 44	.6388 45	.6437 46	.6477 47	.6521 48	.6559 49
342 .	.6599 50	.6624 51	.6652 52	.6722 53	.6779 54	.6821 55	.6870 56
343 .	.6923 57	.6972 54	.7023 59	.7070 60	1.0000 61	*	
344 .	41 1 1	0 360	3 4				
345 .	WU 3 6	+1 C 4 F	32 33	44 11	13 9	5	
346 .	0 0	.8137 1	1.0000 2	*			
347 .	41 3 1.01	0 1441	12 2				
348 .	WU 4 19 C 4 F	11 8	5				
349 .	0 0	.0510 1	.1158 2	.1794 3	.2347 4	.2773 5	.3238 6
350 .	.3541 7	.3856 8	.4031 9	.4263 10	.4401 11	.4529 12	.4690 13
351 .	.4832 14	.4978 15	.5057 16	.5154 17	.5259 18	.5351 19	.5439 20
352 .	.5455 21	.5539 22	.5610 23	.5674 24	.5717 25	.5753 26	.5810 27
353 .	.5847 23	.5911 29	.5992 30	.6029 31	.6112 32	.6140 33	.6175 34
354 .	.6239 35	.6285 36	.6322 37	.6385 38	.6452 39	.6499 40	.6535 41
355 .	.6539 42	.6646 43	.6711 44	.6744 45	.6792 46	.6827 47	.6891 48
356 .	.6952 49	.7217 50	.7261 51	.7133 52	.7157 53	.7222 54	.7266 55
357 .	.7315 56	.7365 57	.7412 58	.7463 59	.7479 60	1.0000 61	*
358 .	42 3 1.01	0 1441	12 2				
359 .	WU 3 19 C 4 F	3 5					
360 .	.0015 1	.0721 1	.1718 2	.2731 3	.3416 4	.4115 5	.4673 6
361 .	.5163 7	.5585 8	.5854 9	.6133 10	.6376 11	.6543 12	.6690 13
362 .	.6903 14	.6934 15	.7121 16	.7192 17	.7273 18	.7369 19	.7435 20
363 .	.7506 21	.7857 22	.7538 23	.7699 24	.7765 25	.7841 26	.7856 27
364 .	.7897 28	.7922 29	.7952 30	.7998 31	.8118 32	.8144 33	.8164 34
365 .	.8139 35	.8173 36	.8172 37	.8201 38	.8241 39	.8232 40	.8317 41
366 .	.8353 42	.8409 43	.8454 44	.8479 45	.8510 46	.8545 47	.8576 48
367 .	.8616 49	.8632 50	.8657 51	.8687 52	.8713 53	.8743 54	.8779 55
368 .	.8819 56	.8849 57	.8870 58	.8875 59	.8890 60	1.0000 61	*
369 .	43 1 51	0 360	3 *				
370 .	WU 3 6	+1 C 4 F	44 43	11 13	9 5		
371 .	1 1 1	.0159 1	.1345 2	.1498 3	.1607 4	.0748 5	.0931 6
372 .	.1455 7	.2045 8	.2541 9	.2961 10	.3288 11	.3570 12	.3985 13
373 .	.4232 14	.4613 15	.4932 16	.5141 17	.5336 18	.5544 19	.5719 20
374 .	.5931 21	.6132 22	.6342 23	.6535 24	.6640 25	.6743 26	.6847 27
375 .	.6961 29	.7093 29	.7159 30	.7258 31	.7360 32	.7421 33	.7492 34
376 .	.7556 35	.7625 36	.7721 37	.7772 38	.7929 39	.7934 40	.7951 41
377 .	.8036 42	.8181 43	.8132 44	.8153 45	.8222 46	.8261 47	.8315 48
378 .	.8363 49	.8346 50	.8423 51	.8446 52	.8503 53	.8532 54	.8565 55
379 .	.8516 56	.8677 57	.8667 58	.8703 59	.8730 60	1.0000 61	*
380 .	44 1 1	0 1440	12 4				
381 .	WU 7 6	+3 C 4 F	13 30	9 5			
382 .	.0071 1	.0071 1	.0071 2	.0355 3	.0496 4	.0638 5	.0851 6

734 .	.1851 7	.1064 8	.1277 3	.1419 11	.1531 11	.1773 12	.1915 13
734 .	.1346 14	.2270 15	.2270 16	.2361 17	.2340 18	.2411 19	.2432 20
735 .	.2524 21	.2756 22	.2756 23	.2837 24	.2918 25	.2379 26	.3121 27
736 .	.3333 28	.3475 29	.3475 30	.3546 31	.3546 32	.3546 33	.3546 34
737 .	.3644 35	.3688 36	.3759 37	.3911 38	.4043 39	.4113 40	.4681 41
738 .	.4641 42	.4955 43	.5035 44	.5105 45	.5248 46	.5248 47	.5331 48
739 .	.5461 49	.5532 50	.5532 51	.5532 52	.5532 53	.5674 54	.5337 55
740 .	.5847 56	.5957 57	.5939 58	.5939 59	.6312 60	1.0000 61 *	
741 .	45 2 0.	0 1440 12	2				
742 .	WU 10	6 14 41 C M F 30	31 11 13 9 5 6				
743 .	1.	.1148 1	.1937 2	.2513 3	.2741 4	.3122 5	.3212 6
744 .	.3344 7	.3545 8	.3714 9	.3875 10	.3994 11	.4133 12	.4157 13
745 .	.4219 14	.4356 15	.4465 16	.4534 17	.4626 18	.4682 19	.4746 20
746 .	.4731 21	.4868 22	.4913 23	.4932 24	.4984 25	.5123 26	.5051 27
747 .	.5086 28	.5100 29	.5142 30	.5181 31	.5226 32	.5272 33	.5311 34
748 .	.5356 35	.5412 36	.5423 37	.5455 38	.5483 39	.5521 40	.5551 41
749 .	.5549 42	.5633 43	.5676 44	.5717 45	.5753 46	.5774 47	.5813 48
750 .	.5856 49	.5895 50	.5911 51	.5956 52	.5995 53	.6255 54	.6293 55
751 .	.6164 56	.6230 57	.6279 58	.6353 59	.6409 60	1.0000 61 *	
752 .	45 3 1.00	1 1 6 2					
753 .	40 5	.33 29 C 18 11 9 5					
754 .	.0001 0	.2319 1	.4215 2	.5520 3	.6360 4	.6385 5	.7437 6
755 .	.7757 7	.8143 8	.8227 9	.8354 10	.8485 11	.8561 12	.8647 13
756 .	.8747 14	.8848 15	.8915 16	.8941 17	.8975 18	.9112 19	.9151 20
757 .	.9193 21	.9128 22	.9159 23	.9165 24	.9191 25	.9219 26	.9241 27
758 .	.9259 28	.9265 29	.9279 30	.9292 31	.9314 32	.9324 33	.9333 34
759 .	.9336 35	.9344 36	.9359 37	.9383 38	.9392 39	.9411 40	.9421 41
760 .	.9432 42	.9439 43	.9443 44	.9477 45	.9484 46	.9497 47	.9514 48
761 .	.9514 49	.9521 50	.9531 51	.9547 52	.9552 53	.9556 54	.9551 55
762 .	.9567 56	.9574 57	.9578 58	.9589 59	.9591 60	1.0000 61 *	
763 .	47 1 0.	1 361 3	*				
764 .	WU 4	6 33 41 C M F 31	11 13 30 5				
765 .	3.	.0171 1	.0113 2	.0215 3	.0274 4	.0350 5	.0347 6
766 .	.0426 7	.0457 8	.0490 9	.0533 10	.0549 11	.0512 12	.0524 13
767 .	.0646 14	.0667 15	.0699 16	.0732 17	.0737 18	.0748 19	.0754 20
768 .	.0781 21	.0812 22	.0855 23	.0893 24	.0909 25	.0931 26	.0953 27
769 .	.0979 28	.1044 29	.1031 30	.1061 31	.1076 32	.1097 33	.1157 34
770 .	.1189 35	.1216 36	.1248 37	.1275 38	.1291 39	.1350 40	.1361 41
771 .	.1404 42	.1425 43	.1474 44	.1490 45	.1528 46	.1565 47	.1603 48
772 .	.1618 49	.1688 50	.1711 51	.1748 52	.1781 53	.1807 54	.1856 55
773 .	.1894 56	.1942 57	.1940 58	.2016 59	.2144 60	1.0000 61 *	
774 .	48 3 1.00	1 0 24 2					
775 .	WU 4	33 31 9 C 5					
776 .	.0001 0	.0739 1	.1938 2	.5127 3	.4263 4	.5181 5	.5968 6
777 .	.6617 7	.7169 8	.7550 9	.7827 10	.8039 11	.8211 12	.8354 13
778 .	.8494 14	.8593 15	.8685 16	.8772 17	.8842 18	.8880 19	.8915 20
779 .	.8962 21	.9037 22	.9117 23	.9268 24	.9394 25	.9134 26	.9152 27
780 .	.9143 28	.9202 29	.9226 30	.9238 31	.9251 32	.9263 33	.9283 34
781 .	.9316 35	.9319 36	.9336 37	.9345 38	.9353 39	.9371 40	.9387 41
782 .	.9410 42	.9438 43	.9423 44	.9435 45	.9443 46	.9448 47	.9453 48
783 .	.9461 49	.9462 51	.9465 51	.9474 52	.9483 53	.9488 54	.9496 55
784 .	.9510 56	.9524 57	.9534 58	.9541 59	.9546 60	1.0000 61 *	
785 .	49 1 0.	1 1443 12	4				
786 .	WU 5	6 33 41 C M F 9 5					
787 .	1.	.1139 1	.1745 2	.2150 3	.2286 4	.2432 5	.2590 6

433 .	.2742	7	.2321	8	.2300	9	.2957	11	.3369	11	.3131	12	.3181	13
433 .	.3249	14	.3294	15	.3316	16	.3356	17	.3373	15	.3401	19	.3407	20
441 .	.3414	21	.3446	22	.3457	23	.3441	24	.3514	25	.3519	26	.3531	27
441 .	.3542	28	.3564	29	.3564	30	.3573	31	.3581	32	.3547	33	.3592	34
442 .	.3604	35	.3615	36	.3620	37	.3632	38	.3649	39	.3660	40	.3671	41
443 .	.3682	42	.3694	43	.3727	44	.3755	45	.3767	46	.3801	47	.3829	48
444 .	.3841	49	.3863	50	.3891	51	.3938	52	.3936	53	.3958	54	.3981	55
445 .	.4119	56	.4126	57	.4154	58	.4142	59	.4199	60	1.0000	61	*	
446 .	51	1	3.	3	360	4	4	4						
447 .	WU	4	6	33	41	4	4	13	9	8	38	5		
448 .	0.	0	.1029	1	.0144	2	.0231	3	.0317	4	.0354	5	.0374	6
449 .	.0441	7	.1538	8	.0575	9	.0651	10	.0671	11	.0757	12	.0835	13
450 .	.0862	14	.0831	15	.0920	16	.0948	17	.0958	18	.0967	19	.1025	20
451 .	.1044	21	.1044	22	.1022	23	.1111	24	.1131	25	.1142	26	.1149	27
452 .	.1159	28	.1178	29	.1216	30	.1236	31	.1255	32	.1255	33	.1303	34
453 .	.1351	35	.1349	36	.1389	37	.1437	38	.1456	39	.1514	40	.1611	41
454 .	.1557	42	.1556	43	.1715	44	.1743	45	.1810	46	.1843	47	.1849	48
455 .	.1904	49	.1944	50	.1973	51	.1981	52	.1992	53	.2031	54	.2140	55
456 .	.2107	56	.2155	57	.2222	58	.2231	59	.2318	60	1.0000	61	*	
457 .	51	3	1.01	3	3	12	3							
458 .	WU	5	33	31	4	0	38	5						
459 .	0.	0	.0146	1	.0139	2	.0133	3	.0138	4	.0183	5	.0183	6
460 .	.0143	7	.0229	8	.0275	9	.0275	10	.0275	11	.0275	12	.0275	13
461 .	.0275	14	.0275	15	.0275	16	.0275	17	.0275	18	.0275	19	.0275	20
462 .	.0275	21	.0275	22	.0275	23	.0275	24	.0275	25	.0275	26	.0275	27
463 .	.0275	28	.0275	29	.0275	30	.0275	31	.0275	32	.0275	33	.0275	34
464 .	.0275	35	.0275	36	.0275	37	.0275	38	.0275	39	.0275	40	.0275	41
465 .	.0275	42	.0321	43	.0321	44	.0321	45	.0321	46	.0321	47	.0321	48
466 .	.0321	49	.0321	50	.0321	51	.0321	52	.0367	53	.0367	54	.0367	55
467 .	.0367	56	.0367	57	.0367	58	.0367	59	.0367	60	1.0000	61	*	
468 .	52	3	1.00	0	0	12	3							
469 .	WU	5	31	3	0	8	38	5						
470 .	0.	0	.1614	1	.2787	2	.3770	3	.4378	4	.4926	5	.5314	6
471 .	.5615	7	.5782	8	.5943	9	.6133	10	.6233	11	.6272	12	.6350	13
472 .	.6433	14	.6511	15	.6544	16	.6644	17	.6725	18	.6765	19	.6838	20
473 .	.6846	21	.6932	22	.6949	23	.7132	24	.7179	25	.7146	26	.7213	27
474 .	.7259	28	.7313	29	.7340	30	.7421	31	.7517	32	.7561	33	.7581	34
475 .	.7634	35	.7680	36	.7714	37	.7754	38	.7794	39	.7348	40	.7834	41
476 .	.7944	42	.7981	43	.8028	44	.8082	45	.8108	46	.8148	47	.8158	48
477 .	.8222	49	.8242	50	.8275	51	.8329	52	.8362	53	.8369	54	.8402	55
478 .	.8422	56	.8444	57	.8443	58	.8503	59	.8556	60	1.0000	61	*	
479 .	53	3	1.01	3	3	12	3							
480 .	WU	5	11	4	0	8	38	5						
481 .	0.	0	.0966	1	.0242	2	.0372	3	.0732	4	.0584	5	.0148	6
482 .	.0681	7	.0782	8	.0735	9	.0761	10	.0734	11	.0702	12	.0133	13
483 .	.0252	14	.0349	15	.0439	16	.0517	17	.0591	18	.0643	19	.0735	20
484 .	.0741	21	.0877	22	.0821	23	.0856	24	.0882	25	.0933	26	.0930	27
485 .	.0963	28	.0992	29	.1007	30	.0933	31	.0905	32	.0972	33	.0903	34
486 .	.0120	35	.0137	36	.0160	37	.0181	38	.0193	39	.0216	40	.0224	41
487 .	.0245	42	.0258	43	.0272	44	.0265	45	.0302	46	.0313	47	.0331	48
488 .	.0345	49	.0354	50	.0379	51	.0391	52	.0404	53	.0418	54	.0439	55
489 .	.0444	56	.0467	57	.0442	58	.0493	59	.0501	60	1.0000	61	*	
490 .	54	3	1.00	3	3	24	2							
491 .	WU	5	2	31	9	0	8	5						
492 .	0.	0	.1077	1	.2038	2	.3021	3	.3933	4	.4736	5	.5523	6

493.	.6072	7	.6589	4	.6996	9	.7323	10	.7514	11	.7899	12	.8141	13
494.	.8335	14	.8454	15	.8517	16	.8733	17	.8833	18	.8928	19	.9007	20
495.	.9071	21	.9124	22	.9161	23	.9197	24	.9234	25	.9293	26	.9324	27
496.	.9356	28	.9343	29	.9413	30	.9424	31	.9446	32	.9456	33	.9467	34
497.	.9438	35	.9519	36	.9551	37	.9562	38	.9567	39	.9572	40	.9583	41
498.	.9539	42	.9549	43	.9519	44	.9519	45	.9530	46	.9536	47	.9546	48
499.	.9552	49	.9657	50	.9657	51	.9683	52	.9694	53	.9699	54	.9710	55
500.	.9711	56	.9721	57	.9721	58	.9731	59	.9741	60	1.0000	61	*	
501.	55	1	10	1	243	2	4							
502.	WU	3	6	34	33	43	C 4 F	9	8	38	5			
503.	0.	0	.0979	1	.1830	2	.2543	3	.3267	4	.3381	5	.4409	6
504.	.4931	7	.5149	8	.5246	9	.5457	10	.5547	11	.5766	12	.5851	13
505.	.5359	14	.6042	15	.6392	16	.6137	17	.6170	18	.6220	19	.6264	20
506.	.6309	21	.6355	22	.6413	23	.6457	24	.6497	25	.6548	26	.6588	27
507.	.6635	28	.6718	29	.6733	30	.6773	31	.6806	32	.6853	33	.6904	34
508.	.6941	35	.6971	36	.7021	37	.7146	38	.7164	39	.7193	40	.7131	41
509.	.7152	42	.7144	43	.7217	44	.7251	45	.7246	46	.7301	47	.7323	48
510.	.7748	49	.7370	50	.7335	51	.7429	52	.7446	53	.7468	54	.7505	55
511.	.7541	56	.7552	57	.7570	58	.7595	59	.7617	60	1.0000	61	*	
512.	56	1	100	0	720	6	4							
513.	WU	5	33	31	9	0	4 F	8	5					
514.	0.	0	.3019	1	.5630	2	.5524	3	.7304	4	.7335	5	.8228	6
515.	.8543	7	.8754	8	.8921	9	.9351	10	.9143	11	.9223	12	.9297	13
516.	.9354	14	.9401	15	.9442	16	.9474	17	.9506	18	.9523	19	.9542	20
517.	.9558	21	.9558	22	.9538	23	.9511	24	.9618	25	.9619	26	.9633	27
518.	.9643	28	.9647	29	.9654	30	.9664	31	.9672	32	.9680	33	.9685	34
519.	.9635	35	.9701	36	.9709	37	.9713	38	.9727	39	.9734	40	.9743	41
520.	.9744	42	.9753	43	.9756	44	.9761	45	.9763	46	.9766	47	.9759	48
521.	.9774	49	.9777	50	.9780	51	.9781	52	.9784	53	.9787	54	.9789	55
522.	.9797	56	.9800	57	.9802	58	.9803	59	.9806	60	1.0000	61	*	
523.	57	3	10	1	144	12	2							
524.	WU	6	2	33	31	9	0	4 F	5					
525.	0.	1	.3045	1	.5851	2	.7321	3	.8386	4	.8626	5	.9559	6
526.	.9172	7	.9346	8	.9470	9	.9579	10	.9626	11	.9685	12	.9726	13
527.	.9758	14	.9758	15	.9823	16	.9831	17	.9839	18	.9847	19	.9847	20
528.	.9857	21	.9857	22	.9866	23	.9868	24	.9868	25	.9874	26	.9879	27
529.	.9887	28	.9847	29	.9892	30	.9913	31	.9911	32	.9914	33	.9919	34
530.	.9925	35	.9925	36	.9933	37	.9933	38	.9938	39	.9941	40	.9949	41
531.	.9957	42	.9962	43	.9962	44	.9965	45	.9965	46	.9965	47	.9965	48
532.	.9965	49	.9945	50	.9955	51	.9955	52	.9965	53	.9965	54	.9965	55
533.	.9968	56	.9948	57	.9968	58	.9958	59	.9973	60	1.0000	61	*	
534.	54	3	100	1	1	72	2							
535.	WU	4	2	31	9	0	5							
536.	0.	0	.1860	1	.3448	2	.4567	3	.5364	4	.5939	5	.6558	6
537.	.7194	7	.7576	8	.7783	9	.8093	10	.8254	11	.8372	12	.8481	13
538.	.8543	14	.8549	15	.8636	16	.8744	17	.8761	18	.8822	19	.8853	20
539.	.8453	21	.8468	22	.8499	23	.8346	24	.8961	25	.9118	26	.9038	27
540.	.9039	28	.9054	29	.9070	30	.9116	31	.9163	32	.9178	33	.9219	34
541.	.9209	35	.9240	36	.9271	37	.9287	38	.9719	39	.9333	40	.9349	41
542.	.9330	42	.9341	43	.9380	44	.9381	45	.9381	46	.9395	47	.9411	48
543.	.9442	49	.9442	50	.9473	51	.9448	52	.9448	53	.9534	54	.9535	55
544.	.9535	56	.9515	57	.9550	58	.9566	59	.9566	60	1.0000	61	*	
545.	54	3	100	1	1	72	2							
546.	WU	6	2	31	31	9	3	0	5					
547.	0.	1	.1519	1	.2818	2	.3749	3	.4355	4	.4881	5	.5268	6

543	.	.9693	7	.96912	6	.9157	4	.9246	10	.6471	11	.6632	12	.6642	13
544	.	.9703	14	.9879	10	.9127	16	.7152	17	.7117	13	.7123	13	.7155	23
545	.	.7141	21	.7243	22	.7773	23	.7247	24	.7743	23	.7343	26	.7411	27
546	.	.7446	24	.7471	24	.7448	30	.7577	31	.7594	32	.7621	33	.7633	34
547	.	.7612	36	.7726	36	.7779	37	.7814	38	.7831	33	.7844	42	.7858	41
548	.	.7441	42	.7946	43	.7359	44	.8048	45	.8050	46	.8364	47	.8134	43
549	.	.6117	49	.4141	53	.4219	51	.4235	52	.8271	53	.4316	54	.4349	55
550	.	.6317	56	.4421	57	.4457	58	.4472	59	.4493	51	1.0000	51	*	
551	.	60	1	1.00	0	0	72	3							
552	.	WU	5	.53	21	8	0	.38	5						
553	.	.3353	0	.0457	1	.0378	2	.1194	3	.1651	4	.1344	5	.2166	6
554	.	.2243	7	.2630	4	.2728	9	.2434	10	.2963	11	.3156	12	.3133	13
555	.	.3197	14	.3267	16	.3526	16	.3431	17	.3466	13	.3513	19	.3550	20
556	.	.3565	21	.3724	22	.3816	23	.3899	24	.3933	25	.4152	26	.4169	27
557	.	.4227	28	.4239	29	.4321	30	.4353	31	.4450	32	.4504	33	.4655	34
558	.	.4672	35	.4719	36	.4778	37	.4771	38	.4918	39	.4977	41	.5135	41
559	.	.5294	42	.5141	43	.5139	44	.5246	45	.5293	46	.5386	47	.5445	43
560	.	.5843	49	.5508	50	.5539	51	.5582	52	.5552	53	.5629	54	.5621	55
561	.	.5737	56	.5743	57	.5631	58	.5855	59	.5984	60	1.0000	61	*	
562	.	61	3	1.00	1	0	24	2							
563	.	WU	3	.53	21	8	0	.38	5						
564	.	3.	3	.3379	1	.5553	2	.6800	3	.7542	4	.8041	5	.8436	6
565	.	.9858	7	.4884	8	.9015	9	.9141	10	.9227	11	.9311	12	.9371	13
566	.	.4420	14	.3467	15	.3428	16	.3527	17	.3552	13	.3571	19	.3534	23
567	.	.9616	21	.9631	22	.9639	23	.9647	24	.9667	25	.9676	26	.9683	27
568	.	.4632	28	.9641	29	.9712	30	.9725	31	.9731	32	.9739	33	.9742	34
569	.	.3764	35	.9748	36	.9753	37	.9756	38	.9762	39	.9766	41	.9758	41
570	.	.9773	42	.9778	43	.9794	44	.9787	45	.9791	46	.9793	47	.9737	48
571	.	.9411	49	.9816	50	.9311	51	.9816	52	.9821	53	.9821	54	.9827	55
572	.	.9824	56	.9834	57	.9834	58	.9838	59	.9839	60	1.0000	61	*	
573	.	62	1	1.00	0	0	24	3							
574	.	WU	5	.53	21	8	0	.38	5						
575	.	0.	0	.0340	1	.0326	2	.1574	3	.2001	4	.2362	5	.2723	6
576	.	.3174	7	.3414	8	.3747	9	.4153	10	.4277	11	.4372	12	.4554	13
577	.	.4581	14	.4819	15	.4934	16	.5011	17	.5085	18	.5181	19	.5238	20
578	.	.6362	21	.5457	22	.5554	23	.5617	24	.5649	25	.5734	26	.5831	27
579	.	.5444	28	.5936	29	.6021	30	.6135	31	.6149	32	.6277	33	.6343	34
580	.	.6649	35	.6635	36	.6631	37	.6810	38	.6883	39	.6894	41	.6979	41
581	.	.7532	42	.7117	43	.7255	44	.7331	45	.7372	46	.7479	47	.7521	43
582	.	.7574	49	.7670	50	.7723	51	.7777	52	.7798	53	.7841	54	.7934	55
583	.	.7935	56	.7979	57	.7989	58	.8021	59	.8086	60	1.0000	61	*	
584	.	63	3	1.00	1	1	24	2							
585	.	WU	3	.53	21	8	0	.38	5						
586	.	0.	0	.1308	1	.1667	2	.5699	3	.6950	4	.7757	5	.8296	6
587	.	.8639	7	.8943	8	.9134	9	.9300	10	.9426	11	.9535	12	.9611	13
588	.	.9674	14	.9732	15	.9757	16	.9814	17	.9824	18	.9852	19	.9871	20
589	.	.9849	21	.9912	22	.9911	23	.9922	24	.9925	25	.9931	26	.9934	27
590	.	.9934	28	.9945	29	.9946	30	.9950	31	.9953	32	.9956	33	.9959	34
591	.	.9962	35	.9965	36	.9966	37	.9967	38	.9969	39	.9971	40	.9972	41
592	.	.9974	42	.9975	43	.9977	44	.9977	45	.9977	46	.9977	47	.9977	48
593	.	.9979	49	.9978	50	.9978	51	.9979	52	.9979	53	.9979	54	.9979	55
594	.	.9979	56	.9943	57	.9981	58	.9981	59	.9981	60	1.0000	61	*	
595	.	60	3	1.00	1	1	24	2							
596	.	WU	3	.53	21	8	0	.38	5						
597	.	.0077	2	.0345	1	.0575	2	.0996	3	.1341	4	.1494	5	.1762	6

603	.	.1992	7	.2184	8	.2375	9	.2481	10	.2737	11	.3143	12	.3183	13
604	.	.3180	14	.3410	15	.3525	16	.3540	17	.3755	18	.3470	19	.3945	20
605	.	.4134	21	.4231	22	.4416	23	.4444	24	.4521	25	.4713	26	.4913	27
606	.	.4941	24	.5096	29	.5211	30	.5326	31	.5364	32	.5479	33	.5632	34
607	.	.5670	35	.5747	36	.5785	37	.5977	38	.6054	39	.6130	40	.6169	41
608	.	.6217	42	.6244	43	.6330	44	.6513	45	.6590	46	.6590	47	.6628	48
609	.	.6624	49	.6628	50	.6715	51	.6921	52	.6897	53	.6847	54	.6935	55
610	.	.7311	56	.7126	57	.7165	58	.7233	59	.7233	60	1.0000	61	*	
611	.	66	1	.25	5	.180	2	4							
612	.	WU	7	5	17	.31	.43 C 4 F	.45	8	5					
613	.	0.	.4374	1	.6501	2	.7532	3	.8124	4	.8341	5	.8492	6	
614	.	.8597	7	.8688	8	.8793	9	.8974	10	.9035	11	.9125	12	.9146	13
615	.	.9216	14	.9231	15	.9275	16	.9326	17	.9321	18	.9336	19	.9336	20
616	.	.9336	21	.9376	22	.9336	23	.9367	24	.9397	25	.9397	26	.9412	27
617	.	.9427	28	.9427	29	.9442	30	.9472	31	.9472	32	.9487	33	.9487	34
618	.	.9447	35	.9487	36	.9487	37	.9447	38	.9447	39	.9487	40	.9487	41
619	.	.9512	42	.9517	43	.9517	44	.9532	45	.9543	46	.9548	47	.9578	48
620	.	.9578	49	.9593	50	.9593	51	.9533	52	.9593	53	.9504	54	.9618	55
621	.	.9614	56	.9623	57	.9623	58	.9623	59	.9623	60	1.0000	61	*	
622	.	66	1	.25	3	.180	1	4							
623	.	WU	6	6	23	C M F	13	.31	4	5					
624	.	0.	.4723	1	.7046	2	.8156	3	.8436	4	.8121	5	.8407	6	
625	.	.4547	7	.9546	8	.3651	9	.3725	10	.9763	11	.9341	12	.9353	13
626	.	.4854	14	.9860	15	.9831	16	.9842	17	.9314	18	.9925	19	.9925	21
627	.	.9925	21	.9925	22	.9925	23	.9925	24	.9925	25	.9925	26	.9925	27
628	.	.9925	28	.9930	29	.9930	30	.9931	31	.9931	32	.9935	33	.9935	34
629	.	.9946	35	.9946	36	.9951	37	.9951	38	.9951	39	.9951	40	.9951	41
630	.	.9957	42	.9957	43	.9957	44	.9957	45	.9957	46	.9957	47	.9952	48
631	.	.9952	49	.9952	51	.9952	51	.9952	52	.9952	53	.9952	54	.9952	55
632	.	.9952	56	.9958	57	.9958	58	.9958	59	.9958	60	1.0000	61	*	
633	.	67	3	1.00	5	0	12	2							
634	.	WU	4	23	9 C	8	5								
635	.	0.	0.	.1980	1	.4293	2	.6153	3	.6593	4	.7253	5	.7813	6
636	.	.7913	7	.7913	8	.4351	9	.8463	10	.8573	11	.8793	12	.9113	13
637	.	.9313	14	.9313	15	.9233	16	.9233	17	.9450	18	.9560	19	.9670	20
638	.	.9570	21	.9733	22	.3733	23	.3393	24	.9493	25	.9593	26	.9833	27
639	.	.9833	28	.9833	29	.9493	30	.9493	31	.9493	32	.9493	33	.9333	34
640	.	.9493	35	.9493	36	.9493	37	.9493	38	.9493	39	.9493	40	.9493	41
641	.	1.0000	42	*											
642	.	68	3	1.00	0	0	0	3							
643	.	WU	4	2	33	11	51	4	8	33	5				
644	.	1.	3	.2183	1	.3744	2	.4733	3	.5353	4	.5892	5	.6291	6
645	.	.6598	7	.6422	8	.6943	9	.7133	10	.7249	11	.7333	12	.7427	13
646	.	.7514	14	.7570	15	.7628	16	.7682	17	.7713	18	.7750	19	.7774	20
647	.	.7797	21	.7829	22	.7444	23	.7363	24	.7901	25	.7936	26	.7954	27
648	.	.7344	28	.8008	29	.4031	30	.4165	31	.8174	32	.8187	33	.8135	34
649	.	.8128	35	.8142	36	.4156	37	.8184	38	.8217	39	.8214	40	.8222	41
650	.	.8244	42	.8265	43	.8236	44	.8311	45	.8324	46	.8345	47	.8366	48
651	.	.8343	49	.8403	51	.8418	51	.8449	52	.8473	53	.8489	54	.8511	55
652	.	.8532	56	.8548	57	.4573	58	.8584	59	.8605	60	1.0000	61	*	
653	.	69	1	.23	3	.240	2	4							
654	.	WU	4	6	13	.31	.32	.3 C M F	8	38	5				
655	.	0.	0.	.0034	1	.0035	2	.0164	3	.0208	4	.0273	5	.0338	6
656	.	.0417	7	.0522	8	.0576	9	.0577	10	.0760	11	.0345	12	.0914	13
657	.	.0943	14	.1071	15	.1156	16	.1262	17	.1361	14	.1479	19	.1595	20

624.	.1717 21	.1276 22	.1374 23	.2037 24	.2237 25	.2350 26	.2444 27
625.	.2677 24	.2246 25	.2343 26	.3106 27	.3227 28	.3345 29	.3521 34
626.	.7617 26	.7484 27	.4047 28	.4154 29	.4316 30	.4422 41	.4529 41
627.	.4053 42	.4743 43	.4357 44	.5113 45	.5217 46	.5345 47	.5435 48
628.	.5624 43	.5745 50	.5379 51	.5379 52	.6125 53	.6253 54	.6365 55
629.	.6447 54	.5602 57	.4710 58	.6421 59	.6939 60	1.0000 61	*
630.	71 2 1.00	0 361	3	5			
631.	HU 6 31 32	9 C M F 8	34 5				
632.	J. 3 .2212 1	.0039 2	.2035 3	.0199 4	.0343 5	.3498 6	
633.	.1665 7	.0831 8	.1011 9	.1173 10	.1150 11	.1525 12	.1633 13
634.	.1945 14	.2222 15	.2458 16	.2722 17	.2944 18	.3177 19	.3314 20
635.	.3495 21	.3668 22	.3837 23	.4015 24	.4234 25	.4374 26	.4553 27
636.	.4723 28	.4918 29	.5121 31	.5355 31	.5586 32	.5813 33	.6016 34
637.	.6231 35	.6448 36	.6650 37	.6936 38	.7008 39	.7152 40	.7278 41
638.	.7414 42	.7549 43	.7646 44	.7784 45	.7991 46	.7973 47	.8050 48
639.	.8142 49	.8207 50	.8264 51	.8321 52	.8395 53	.8474 54	.8492 55
640.	.8551 56	.8593 57	.8639 58	.8689 59	.8736 60	1.0000 61	*
641.	71 1 1.00	3 241	2 4				
642.	HU 6 33 31	45 9 C M F 8 5					
643.	0. 0 .0822 1	.2549 2	.3945 3	.4332 4	.5430 5	.6877 6	
644.	.7753 7	.8151 8	.4478 9	.3741 10	.8306 11	.9174 12	.9342 13
645.	.3411 14	.3534 15	.2603 16	.3631 17	.9685 18	.9645 19	.9699 20
646.	.2533 21	.2712 22	.2712 23	.3725 24	.9753 25	.9767 26	.9757 27
647.	.4767 28	.4741 29	.4741 30	.3781 31	.9791 32	.9731 33	.9731 34
648.	.9745 35	.9795 36	.9795 37	.9318 38	.9808 39	.9808 40	.9822 41
649.	.9522 42	.9436 43	.9836 44	.9836 45	.9836 46	.9336 47	.9336 48
650.	.9836 49	.9836 50	.9836 51	.9849 52	.9849 53	.9849 54	.9849 55
651.	.9863 56	.9863 57	.9877 58	.9877 59	.9877 60	1.0000 61	*
652.	72 1 .50 0 240	2 4					
653.	HU 7 6 13 31	45 9 C M F 38 5					
654.	J. 3 .1237 1	.2132 2	.3373 3	.3759 4	.4346 5	.4394 6	
655.	.5442 7	.5911 8	.6301 9	.5551 10	.6949 11	.7214 12	.7415 13
656.	.7613 14	.7751 15	.7489 16	.8013 17	.8096 18	.8185 19	.8259 20
657.	.8335 21	.8345 22	.8442 23	.8513 24	.8551 25	.8611 26	.8567 27
658.	.8694 28	.8732 29	.8752 30	.8803 31	.8843 32	.8874 33	.8908 34
659.	.8936 35	.8963 36	.8987 37	.9005 38	.9021 39	.9033 40	.9051 41
660.	.9071 42	.9146 43	.9111 44	.9115 45	.9172 46	.9150 47	.9163 48
661.	.9172 49	.9184 50	.9132 51	.9202 52	.9211 53	.9224 54	.9238 55
662.	.9253 56	.9267 57	.9281 58	.9294 59	.9311 60	1.0000 61	*
663.	73 2 .25 3 361	3 3					
664.	HU 6 5 1 9 3 36 C M F 5						
665.	0. 0 .0244 1	.0475 2	.1541 3	.1768 4	.1914 5	.1185 6	
701.	.1251 7	.1328 8	.1441 9	.1554 10	.1627 11	.1711 12	.1773 13
702.	.1334 14	.1895 15	.1926 16	.1962 17	.1999 18	.2035 19	.2056 20
703.	.2102 21	.2115 22	.2151 23	.2188 24	.2211 25	.2226 26	.2236 27
704.	.2243 28	.2273 29	.2285 30	.2310 31	.2334 32	.2352 33	.2371 34
705.	.2413 35	.2419 36	.2450 37	.2456 38	.2515 39	.2529 40	.2541 41
706.	.2584 42	.2596 43	.2645 44	.2675 45	.2693 46	.2761 47	.2779 48
707.	.2731 49	.2821 50	.2846 51	.2976 52	.2925 53	.2949 54	.2992 55
708.	.3041 56	.3196 57	.3120 58	.3169 59	.3205 60	1.0000 61	*
709.	74 2 .50 3 481	4 3					
710.	HU 6 6 1 9 3 36 C M F 5						
711.	.1031 3 .2023 1	.3577 2	.4577 3	.5374 4	.5313 5	.6371 6	
712.	.6741 7	.7022 8	.7213 9	.7384 10	.7525 11	.7636 12	.7755 13
713.	.7837 14	.7888 15	.7946 16	.8000 17	.8144 18	.8193 19	.8143 20

713 .	.8178	21	.9227	22	.4254	23	.3231	24	.8329	25	.9367	26	.4396	27
714 .	.8429	28	.9462	29	.3493	30	.3514	31	.8538	32	.8566	33	.8536	34
715 .	.8618	35	.9646	36	.9575	37	.4704	38	.8726	39	.8760	40	.8795	41
716 .	.8826	42	.8851	43	.4558	44	.8884	45	.8896	46	.8917	47	.8938	48
717 .	.4970	49	.3993	50	.4016	51	.3041	52	.9179	53	.9191	54	.9121	55
718 .	.9143	56	.9166	57	.9185	58	.9203	59	.9237	60	1.0000	61	*	
719 .	75	1	.51	0	.360	3	4	4	0	M	F	38	43	5
720 .	40	8	6	31	45	3	4	0	M	F	38	43	5	
721 .	3.	3	.1526	1	.2523	2	.3451	3	.4058	4	.4436	5	.4793	6
722 .	.5933	7	.5156	8	.5314	9	.5406	10	.5477	11	.5515	12	.5702	13
723 .	.5814	14	.5846	15	.0942	16	.6023	17	.6169	18	.6100	19	.6136	20
724 .	.6112	21	.6269	22	.6321	23	.6363	24	.6422	25	.6473	26	.6544	27
725 .	.6535	28	.6641	29	.6697	30	.6764	31	.6835	32	.6896	33	.6973	34
726 .	.7024	35	.7039	36	.7080	37	.7111	38	.7141	39	.7192	40	.7254	41
727 .	.7315	42	.7346	43	.7443	44	.7504	45	.7540	46	.7586	47	.7611	48
728 .	.7657	49	.7713	50	.7723	51	.7745	52	.7815	53	.7836	54	.7866	55
729 .	.7912	56	.7953	57	.8019	58	.8061	59	.8091	60	1.0000	61	*	
730 .	WORK.UNIT													
731 .	45													
732 .	1	4	7	45	4	45	6	+5	5	45				
733 .	2	4	3	5	2	5	4	5	0	5				
734 .	3	4	1	4	3	4	4	5	5	5				
735 .	4	4	3	3	4	3	2	30	5	30				
736 .	5	4	3	3	4	3	5	3	5	3				
737 .	6	4	15	7										
738 .	7	3	2	5	3	4	4	9						
739 .	8	2	5	2	5	2								
740 .	9	3	5	1	5	1								
741 .	10	3	3	15	5	15								
742 .	11	2	5	10	5	10								
743 .	12	4	3	10	4	10								
744 .	13	3	3	6	4	6								
745 .	14	3	5	15	3	15								
746 .	15	4	6	3	1	3								
747 .	16	3	5	15	7	15								
748 .	17	2	4	3	5	3								
749 .	18	2	5	9	6	9								
750 .	19	3	4	7	4	7								
751 .	20	2	5	45	5	45								
752 .	21	2	5	25	6	25								
753 .	22	2	7	25	5	25								
754 .	23	3	5	10	6	10								
755 .	24	1	1	15	3	15								
756 .	25	3	1	15	3	15								
757 .	26	1	1	3										
758 .	27	3	1	9	6	9								
759 .	28	3	2	9	3	9								
760 .	29	3	1	35	3	35								
761 .	30	4	2	3	1	8								
762 .	31	3	17	5	5	5								
763 .	32	3	2	33	4	31	17	31						
764 .	33	2	15	8	6	8								
765 .	34	2	5	12	6	12								
766 .	35	1	14	20										
767 .	36	1	11	30	11	30	7	30						

758 . 57 * 6 2 4 2 2 2 1 2
 759 . 58 * 7 12 1 12
 770 . 59 1 1 1
 771 . * 2 1 1 60
 772 . * 2 1 15 1 72
 773 . * 2 1 14 25
 774 . * 2 2 15 25 6 51
 775 . * 2 2 17 45 3 45
 776 . 45 2 21 15 13 30
 777 . TYPE
 778 . 2
 779 . 1.1 1 1.0 1 *
 780 . 1.0 0 0.0015 1 1.0117 2 1.01+1 3 1.0183 4 1.0216 5 1.0295 6
 781 . 1.1533 7 1.0373 4 1.0373 3 1.0419 11 1.0534 11 1.0682 12 1.1224 13
 782 . 1.1544 14 1.1138 15 1.1129 16 1.1175 17 1.1205 14 1.1246 19 1.1353 20
 783 . 1.1569 21 1.1407 22 1.1445 23 1.1587 24 1.1837 25 1.2838 26 1.2486 27
 784 . 1.2334 28 1.2947 29 1.3110 30 0.3644 31 0.4178 32 1.4576 33 1.4579 34
 785 . 1.4755 35 1.5333 36 1.5337 37 1.5515 38 1.5877 39 1.5395 41 1.5955 41
 786 . 1.6222 42 1.6172 43 1.6133 44 1.6271 45 1.6544 46 1.6591 47 1.6615 48
 787 . 1.6357 49 1.6493 50 1.6997 51 1.7013 52 1.7426 53 1.7458 54 1.7551 55
 788 . 1.7548 56 1.7782 57 1.7797 58 1.7438 59 1.7866 60 1.8153 61 1.8183 62
 789 . 1.4549 63 1.4567 64 1.8592 65 1.4727 66 1.8727 67 1.9133 68 1.4391 69
 790 . 1.9404 71 1.9411 71 1.9545 72 1.9511 73 1.9912 74 1.0101 75
 791 . *
 792 . 1.1 1 1.5 1 1.7 2 1.9 3 1.0 *
 793 . 1.1000 1 1.014 18 1.023 21 1.029 45 1.0312 46 1.0314 47 1.0315 48
 794 . 1.435 51 1.463 52 1.534 53 1.551 54 1.555 55 1.618 56 1.755 57
 795 . 1.811 58 1.822 59 1.870 61 1.431 63 0.896 67 0.950 68 0.956 71
 796 . 1.352 72 1.0111 74
 797 . *
 798 . PRIORITY
 799 . *
 800 . 24. 0. 20.
 801 . 12. 1. 80.
 812 . 1. 24. 1463.
 813 . 1. 24. 1463.
 804 . DATES
 *35 . .01 .01 .01 .01 .03 .05 .05 .07 .10 .07
 805 . .05 .04 .04 .05 .07 .10 .07 .05 .05 .03
 817 . .01 .01 .01 .01
 824 . .0 .0 .0 .0 .0 .0 .05 .0 .05 .0
 809 . .0 .0 .0 .0 .0 .05 .0 .0 .0 .0
 810 . .0 .0 .0 .0
 811 . 15
 812 . 241.0 680.0 512.0 222.0 158.0 321.0 217.0 222.0
 813 . 92.0 255.0 344.0 168.0 60.0 65.0 54.0
 814 . 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0
 815 . 150.0 150.0 150.0 150.0 150.0 150.0 150.0 150.0
 816 . VEHICLES 2
 817 . HELICOPTER AIR
 818 . AMBULANCE GROUND
 819 . DEFAULTS
 820 . RULES
 821 . REQUEST HELICOPTER POOL , S
 822 . LOAD.1 AMBULANCE 2 ,

423 .		HELICOPTER	2	*	*
424 .	DESTN.1	AMBULANCE	1 1	HOME	*
425 .			2 3		*
426 .		HELICOPTER	1 1	HOME	*
427 .			2 3		5
428 .	UNLOAD.1	AMBULANCE	3		*
429 .		HELICOPTER	3		5
430 .	LOAD.2	AMBULANCE	1 2		*
431 .			2 2		*
432 .			3 2		*
433 .			4 2		*
434 .		HELICOPTER	1 2		*
435 .			2 2		*
436 .			3 2		*
437 .			4 2		5
438 .	DESTN.2	AMBULANCE	1 1	HOME	*
439 .			2 3		*
440 .		HELICOPTER	1 1	HOME	*
441 .			2 3		5
442 .	UNLOAD.2	AMBULANCE	3		*
443 .		HELICOPTER	3		5
444 .	END.RULE				
445 .	SPEED	HELICOPTER	100		
446 .		AMBULANCE	25		5
447 .	DONE				
448 .	LEVELS	4			
449 .	PERA	36			
450 .	LOAD	INPATIENT	1.0		
451 .		OUTPATIENT	1.5		5
452 .	TREATERS	0 10			*
453 .	RULES				
454 .	REQUEST	AMBULANCE	BAS CS HOSP	*	5
455 .	END.RULE				
456 .	DONE				
457 .	BAS	9			
458 .	DISTANCE	3			
459 .	VEHICLES	AMBULANCE	1 8		*
460 .	LOAD	OUTPATIENT	0.2		*
461 .	TREATERS	3 2 5 15 6 6	15 1		5
462 .	REC.FAC	4 5 6 3 11 13	17 20		24
463 .		26 32 41 42 45	46 48		54
464 .		61 63 64 67	57 58		59
465 .	RULES				
466 .	REQUEST	AMBULANCE	BAS CS HOSP	*	5
467 .	END.RULE				
468 .	DONE				
469 .	CS	3			
470 .	DISTANCE	12			
471 .	VEHICLES	AMBULANCE	3 8		*
472 .	LOAD	OUTPATIENT	0.2		*
473 .	TEPS	60			
474 .	EVAC	3			
475 .	TREATERS	1 2 2 2 3 2	5 12		13 2
476 .		15 4 15 2 14 4	6		*
477 .	REC.FAC	30 34 51 52 53	60 62		68 71 73 74

474 .
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	RULES						
	REQUEST	AMBULANCE	GS	HOSP	,	\$	
	END RULE						
	DONE						
HOSP	1						
DISTANCE	30						
VEHICLES	AMBULANCE	6	8	3			
LOAD	OUTPATIENT	0.1		5			
BEDS	200						
EVAC	15						
TREATERS	1 2 2 19 3 6 4 23 5 27 6 16						
	7 3 9 1 10 1 11 1 13 3 14 1						
	15 6 16 3 17 1 18 11 19 3 20 1 \$						
SEC.FAC	1 2 3 7 8 10 12 14 15 16 18						
	19 21 22 23 25 27 28 29 31 33 35						
	36 37 38 39 40 43 44 47 49 51 55						
	56 65 66 69 71 72 75 8						
	DONE						
OPERATION							
DAY	15						
DAWN	5.						
DUSK	18.						
AIR.TRIG	6						
GRND.TRIG	2						
CONV	2.						
POOL	30						
	HELICOPTER 16 24 \$						
DONE							
OUTPUT							
ECHO							
FREQUENCY	1.0						
RUN.NO	II-39						
DONE	.						

NAME: II - COMM ZONE SIMULATION SUB-MODEL.

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MEDICAL TECHNOLOGY INPUTS,
PATIENT CLASS DATA.

SIMULATION: II-3

JULY 1977

CLASS PATORITY TOLERANCE THRESHOLD NEXT LEVEL WORK UNITS

1	1	1	5	18)	1	4	6	17	9	15	35	14	4IFCM	42	11	13	5	6	CONV:	63,	133	MORT:	33,	113.	
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 115. FIRST AID:																									
**	NOTE	**	All patients in this class will increase their conv.																						
2	1	1	5	18)	3	4	6	33	9	42FCM	11	5													
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 50. FIRST AID:																									
3	1	1	33	18)	1	4	6	9	15	33	14	4IFCM	42	11	5										
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 112. FIRST AID:																									
**	NOTE	**	All patients in this class will increase their conv.																						
4	2	1	99	72)	F	2	6	12	33	29FCM	11	9	5												
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 73. FIRST AID:																									
5	2	1	99	18)	1	2	6	33	43FCM	5	2														
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 42. FIRST AID:																									
6	3	1	99	18)	12	2	6	33	43FCM	5	5														
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 42. FIRST AID:																									
7	1	1	33	18)	1	8	6	9	15	32	33	4IFCM	42	13	11	5	b								
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 137. FIRST AID:																									
8	1	1	99	18)	12	2	6	17	33	4IFCM	42	13	33	11	3	5	b								
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 135. FIRST AID:																									
9	3	1	93	144)	12	2	33	9	1IFCM	5															
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 27. FIRST AID:																									
10	1	1	33	18)	1	4	9	15	12	33	4IFCM	42	43	13	11	5									
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 137. FIRST AID:																									
11	2	1	13	5	3	2	17	35	4IFCM	11															
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 59. FIRST AID:																									
12	2	1	99	18)	1	4	5	9	12	33	4IFCM	42	11	13	5	5	b								
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 139. FIRST AID:																									
13	3	1	99	72)	F	2	9	33	29FCM	11	13	5													
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 63. FIRST AID:																									
14	1	1	99	72)	F	4	9	35FCM	11	55	5														
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 46. FIRST AID:																									
15	2	1	13	99	72)	F	2	9	35FCM	11	55	5													
MIN-MAX TREATMENT TIMES WITHOUT DELAYS. TOTAL: 46. FIRST AID:																									

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NAME'S 111 - COMBAT ZONE SIMULATION SOB-MODEL

----SIMULATION 11-39----

16/17/77

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16	2	0	5	120	1	6	17	9	15	4IFCM	42	11	13	5	6	CONV1	45	93	MORT1	45,	33	.		
						6	12	127	127	FIRST AID1	45,	90	CONV1	45	93	MORT1	45,	33	MORT1	45,	33	.		
17	3	1.00	99	720	6	9	29FCM	11	11	59	FIRST AID1	36,	36	CONV1	36,	36	MORT1	36,	36	.				
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	36,	36	.	
18	3	1.00	93	1440	12	6	35FCM	16	5	33	FIRST AID1	22,	22	CONV1	22,	22	MORT1	22,	22	.				
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	22,	22	.	
19	3	1.00	93	1440	12	6	35FCM	16	5	33	FIRST AID1	22,	22	CONV1	22,	22	MORT1	22,	22	.				
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	22,	22	.	
20	3	1.00	93	1440	12	6	35FCM	16	5	33	FIRST AID1	0,	0	CONV1	20,	20	MORT1	0,	0	.				
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	20,	20	.	
21	3	1.00	93	1440	12	6	35FCM	16	5	33	FIRST AID1	0,	0	CONV1	65,	65	MORT1	65,	65	.				
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	65,	65	.	
22	3	1.00	93	1440	12	6	35FCM	16	5	33	FIRST AID1	57,	57	CONV1	57,	57	MORT1	57,	57	.				
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	57,	57	.	
23	3	0	39	143	1	6	35	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	57,	57	.	
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	57,	57	.	
24	3	0	39	143	1	6	35	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	57,	57	.	
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	57,	57	.	
25	2	50	93	768	3	6	35	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	57,	57	.	
						6	33	9	14	27	4IFCM	43	11	10	22	13	38	5	6	CONV1	57,	57	.	
26	1	1.00	99	720	r	2	6	35	9	14	29FCM	11	5	CONV1	54,	54	MORT1	54,	54	.				
						6	33	9	14	29FCM	11	5	CONV1	54,	54	MORT1	54,	54	.					
27	1	0	99	180	1	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
28	1	1.00	99	181	1	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
29	1	1	39	145	2	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
30	2	0	49	480	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
31	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
32	4	1	1.00	99	723	1	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
33	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
34	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
35	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
36	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
37	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
38	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
39	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
40	2	0	49	480	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
41	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
42	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
43	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
44	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
45	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
46	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
47	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
48	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
49	1	0	59	460	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
50	2	0	49	480	4	6	35	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CONV1	54,	54	.	
						6	33	9	14	27	4IFCM	43	11	10	13	13	38	5	6	CON				

NAME: LT - COMBAT ZONE SIMULATION Sub-MODEL,

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33	2	3	94	24	2	4	6	33	6	27	24	41FCM	10	13	9	5	6
MEN-MAX	1464	61	1145	51145	51	51	5	93	128	27	41FCM	65	103	CONV	65	100	40R1	65,
34	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100.
MEN-MAX	1464	61	1145	51145	51	51	51	33	44	45	45	45	38	5	.....	.....	.....	.....
35	3	1,11	94	3	7	2	4	33	103	103	FIRST AI01	9	9	CONV	75	85	40R1	0,
MEN-MAX	1464	61	1145	51145	51	51	51	33	44	45	45	45	38	5	.....	.....	.....	.....
36	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	9	5	5
38	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
39	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	9	5	5
40	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
41	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
42	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
43	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
44	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
45	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
46	3	1,11	94	3	7	2	4	33	103	103	FIRST AI01	9	9	CONV	75	85	40R1	0,
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
47	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
48	3	1,11	94	3	7	2	4	33	103	103	FIRST AI01	9	9	CONV	75	85	40R1	0,
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
49	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5
50	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MEN-MAX	1464	61	1145	51145	51	51	51	6	17	16	41FCM	43	41	13	33	34	9	5

HISTOLOGY AND PHYSIOLOGY OF THE MAMMALIAN TESTIS

ESTIMATION

卷之二

MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL	70%	114	6125	A101	45	81	CONV	40%	81	CONV	46*
51 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	3	33	31	4C	38	5	CONV:	15	60814	3,	J
52 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	30	30	23	FCM	40D	0	CONV:	15	60814	0,	J
53 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	3	31	32	4B	5	CONV:	6	60814	0,	J	
54 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	3	31	32	4B	5	CONV:	6	60814	0,	J	
55 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	2	31	31	9C	5	CONV:	11	60814	3,	J	
56 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	15	16	16	FIRST A101	0,	CONV:	11	60814	3,	J	
57 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	6	33	33	4C	24	9	CONV:	5	60814	0,	J
58 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	66	91	91	FIRST A101	4B	73	CONV:	64	73	MORT1	48,
59 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	2	31	31	9C	5	CONV:	11	60814	0,	J	
60 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	2	31	31	9C	5	CONV:	11	60814	0,	J	
61 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	2	31	31	9C	5	CONV:	11	60814	0,	J	
62 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	15	15	15	FIRST A101	0,	CONV:	12	60814	0,	J	
63 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	2	33	31	9	4C	5	CONV:	21	60814	21,	21
64 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	24	24	24	FIRST A101	0,	CONV:	21	60814	0,	J	
65 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	10	10	10	FIRST A101	0,	CONV:	7	7	MORT1	0,	J
66 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	56	96	96	FIRST A101	0,	CONV:	7	7	MORT1	0,	J
67 MIN-MAX TREATMENT TIMES WITHOUT DELAYS		TOTAL:	10	16	16	FIRST A101	0,	CONV:	11	11	MORT1	0,	0

PATIENT	STABILIZATION TIME	VACUUM THRESHOLD	TREATMENT
1	24.1 HRS	1.0	20.0 MIN
2	12.1 HRS	1.0	60.0 MIN
3	3.1 HRS	24.0	140.0 MIN
4	0.0 HRS	24.0	160.0 MIN

NAME'S II - COMBAT ZONE SIMULATION SUB-MODEL.

WORK UNITS AND PREFERRED TREATERS

WORK PREFERRED	1ST ALT.		2ND ALT.		3RD ALT.	
	1ST	2ND	1ST	2ND	1ST	2ND
1	7	45	4	45	6	45
2	3	5	2	5	4	5
31	1	4	3	4	4	5
4	3	31	4	30	2	30
5	3	3	4	3	4	3
6	15	3	5	5	6	5
7	9	5	5	6	4	9
8	5	2	6	2	4	1
9	6	1	6	1	4	1
10	5	15	6	15	4	15
11	6	11	5	10	4	11
12	3	10	4	10	6	10
13	3	9	4	8	6	6
14	6	15	4	15	4	15
15	6	1	4	1	3	4
16	5	15	6	15	4	15
17	4	3	5	5	7	7
18	5	4	4	5	9	7
19	5	7	4	7	4	7
20	6	45	5	45	5	45
21	5	25	6	25	6	25
22	7	25	5	25	5	25
23	5	10	6	10	4	10
24	4	15	3	15	2	15
25	1	15	3	15	6	15
26	3	3	3	3	6	3
27	4	4	4	4	9	9
28	2	3	5	9	6	9
29	1	55	2	35	6	35
30	2	3	1	8	4	8
31	13	5	5	5	5	5
32	12	50	4	50	13	30
33	16	6	6	6	8	9
34	5	12	6	12	6	12
35	14	22	4	22	4	22
36	13	53	11	53	7	53
37	3	2	4	2	2	2
38	2	12	4	12	4	12
39	9	0	0	0	0	0
40	9	61	1	35	5	71
41	1	35	5	35	5	71
42	19	25	6	56	6	56
43	19	25	5	45	5	45
44	17	45	5	45	5	45
45	20	15	13	15	13	15

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SIMULATION: II-39

NAME: II - COMBAT ZONE SIMULATION SUB-ROUTINE - EDITION 11-39

OPERAATIONAL INPUTS.

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FACILITY LEVEL 1		FACILITY LEVEL 2		FACILITY LEVEL 3		FACILITY LEVEL 4		FACILITY LEVEL 5		
	UNITS		UNITS		UNITS		UNITS		UNITS	
• 1	DISTANCE	3 MILES TO FEBA		• 1	DISTANCE	3 MILES TO FEBA		• 1	DISTANCE	3 MILES TO FEBA
	EVACUATION POLICY	0 DAYS			EVACUATION POLICY	0 DAYS			EVACUATION POLICY	0 DAYS
	EDDS	0			EDDS	0			EDDS	0
	SUPPORTING UNIT	CS 0 1			SUPPORTING UNIT	CS 0 1			SUPPORTING UNIT	CS 0 1
	HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.
	AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.
	TREATERS	4 TYPES			TREATERS	4 TYPES			TREATERS	4 TYPES
		3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.
• 2	DISTANCE	3 MILES TO FEBA		• 2	DISTANCE	3 MILES TO FEBA		• 2	DISTANCE	3 MILES TO FEBA
	EVACUATION POLICY	2 DAYS			EVACUATION POLICY	2 DAYS			EVACUATION POLICY	2 DAYS
	EDDS	0			EDDS	0			EDDS	0
	SUPPORTING UNIT	CS 0 1			SUPPORTING UNIT	CS 0 1			SUPPORTING UNIT	CS 0 1
	HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.
	AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.
	TREATERS	4 TYPES			TREATERS	4 TYPES			TREATERS	4 TYPES
		3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.
• 3	DISTANCE	3 MILES TO FEBA		• 3	DISTANCE	3 MILES TO FEBA		• 3	DISTANCE	3 MILES TO FEBA
	EVACUATION POLICY	3 DAYS			EVACUATION POLICY	3 DAYS			EVACUATION POLICY	3 DAYS
	EDDS	0			EDDS	0			EDDS	0
	SUPPORTING UNIT	CS 0 2			SUPPORTING UNIT	CS 0 2			SUPPORTING UNIT	CS 0 2
	HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.
	AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.
	TREATERS	6 TYPES			TREATERS	6 TYPES			TREATERS	6 TYPES
		3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.
• 4	DISTANCE	3 MILES TO FEBA		• 4	DISTANCE	3 MILES TO FEBA		• 4	DISTANCE	3 MILES TO FEBA
	EVACUATION POLICY	4 DAYS			EVACUATION POLICY	4 DAYS			EVACUATION POLICY	4 DAYS
	EDDS	0			EDDS	0			EDDS	0
	SUPPORTING UNIT	CS 0 2			SUPPORTING UNIT	CS 0 2			SUPPORTING UNIT	CS 0 2
	HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.
	AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.
	TREATERS	6 TYPES			TREATERS	6 TYPES			TREATERS	6 TYPES
		3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.
• 5	DISTANCE	3 MILES TO FEBA		• 5	DISTANCE	3 MILES TO FEBA		• 5	DISTANCE	3 MILES TO FEBA
	EVACUATION POLICY	5 DAYS			EVACUATION POLICY	5 DAYS			EVACUATION POLICY	5 DAYS
	EDDS	0			EDDS	0			EDDS	0
	SUPPORTING UNIT	CS 0 2			SUPPORTING UNIT	CS 0 2			SUPPORTING UNIT	CS 0 2
	HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.			HELICOPTER	0 ASSIGNED.
	AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.			AMBULANCE	0 ASSIGNED.
	TREATERS	6 TYPES			TREATERS	6 TYPES			TREATERS	6 TYPES
		3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.				3 2. 5 15. 6 6. 15 1.

NAME: II - COMBAT ZONE SIMULATION SUB-MODEL.

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----SIMULATION: II-39

DISTANCE		MILES TO FEBA			DAYS		
6	EVACUATION POLICY	0	0				
BEDS	SUPPORTING UNIT	CS	0	2			
HEICOPTER			0	ASSIGNED.	SPEED	4	100
AMBULANCE			1	ASSIGNED.	SPEED	4	25
TREATERS			4	TYPES			
			3	2,	5	15,	6
			4	6,	6,	15,	1,
7	DISTANCE						
EVACUATION POLICY	3	MILES TO FEBA					
BEDS	SUPPORTING UNIT	0	0	3			
HEICOPTER		CS	0	ASSIGNED.	SPEED	4	100
AMBULANCE			1	ASSIGNED.	SPEED	4	25
TREATERS			4	TYPES			
			3	2,	5	15,	6
			4	6,	6,	15,	1,
8	DISTANCE						
EVACUATION POLICY	3	MILES TO FEBA					
BEDS	SUPPORTING UNIT	0	0	3			
HEICOPTER		CS	0	ASSIGNED.	SPEED	4	100
AMBULANCE			1	ASSIGNED.	SPEED	4	25
TREATERS			4	TYPES			
			3	2,	5	15,	6
			4	6,	6,	15,	1,
9	DISTANCE						
EVACUATION POLICY	3	MILES TO FEBA					
BEDS	SUPPORTING UNIT	0	0	3			
HEICOPTER		CS	0	ASSIGNED.	SPEED	4	100
AMBULANCE			1	ASSIGNED.	SPEED	4	25
TREATERS			4	TYPES			
			3	2,	5	15,	6
			4	6,	6,	15,	1,
10	FACILITY LEVEL + CS	3	UNITS				
11	DISTANCE						
EVACUATION POLICY	12	MILES TO FEBA					
BEDS	SUPPORTING UNIT	0	0	1			
HEICOPTER		CS	0	ASSIGNED.	SPEED	4	100
AMBULANCE			1	ASSIGNED.	SPEED	4	25
TREATERS			1	TYPES			
			1	2,	2,	7,	3,
			1	2,	18,	4,	
			1	2,	12,	610,	
			1	7,	4,	15,	2,
			1	7,	15,	15,	15,
12	DISTANCE						
EVACUATION POLICY	12	MILES TO FEBA					
BEDS	SUPPORTING UNIT	0	0	1			

NAMES II - COMBAT ZONE SIMULATION SUB-MODEL

-----SIMULATION II-39-----

OPERATIONAL AND LOGISTICS INPUTS

LENGTH OF COMBAT	15 DAYS
DAULIGHT HOURS FROM	600 TO 1800
AIR VEHICLE THRESHOLD	0
GROUND VEH THRESHOLD	2

J6/17/77

PAGE # 28

APPENDIX D

SAMPLE COMPUTER REPORTS OF
NAMES II BASELINE SIMULATION
OUT PUTS

NAME: II - COMBAT ZONE SIMULATION SUB-MODEL. ---SIMULATION: II-39 DAV: 11 DATE: 06/17/77 PAGE: 269

DAY 11 OF 15

PATIENT STATISTICS FOR EACH LEVEL

FEBA

PK102111

PK102111

	1	2	3	4	TOTAL	1	2	3	4	TOTAL
ENTERED FACILITY	1	2	3	4	-	1	2	3	4	-
VACUATED TO THIS FACILITY	114	63	1-5	6-5	+16	1142	628	1637	746	+133
TOTAL ADMISSIONS	114	63	1-5	6-5	+16	1142	628	1637	746	+133
RETURDED TO DAY = NO 2014	1	2	3	4	-	1	2	3	4	-
TOTAL	1	2	3	4	-	1	2	3	4	-
ONCO - IN TREATMENT	0	0	0	0	-	0	0	0	0	-
- IN TREATMENT ACTIVE	0	0	0	0	-	0	0	0	0	-
- IN TREATMENT RECOVER	0	0	0	0	-	0	0	0	0	-
- IN TRANSIT	0	0	0	0	-	0	0	0	0	-
TOTAL	0	0	0	0	-	0	0	0	0	-
VACUATED	115	82	1-6	3	+53	1175	619	1536	3	3232
TOTAL LEAVING	115	82	1-6	3	+53	1175	619	1536	3	3232
REMAINING AT END OF PERIOD	3	1	4	3	9	0	0	0	0	0
STABILIZED- NO TREATERS ASSIGNED	0	0	0	0	-	0	0	0	0	-
- EJAC POLICY LIMIT	0	0	0	0	-	0	0	0	0	-
- NO BEDS	0	0	0	0	-	0	0	0	0	-
TOTAL	0	0	0	0	-	0	0	0	0	-
REMAINING IN STABILIZATION	0	0	0	0	-	0	0	0	0	-
CONVALESCENCE - ENTERED	0	0	0	0	-	0	0	0	0	-
- INCREASED	0	0	0	0	-	0	0	0	0	-
REMAINING IN CONValescence	0	0	0	0	-	0	0	0	0	-

DATA 11 - CUSTODIAL TIME SITUATION SUB-SAMPLE: DAILY SITUATIONS DURING COMBAT PERIOD
PAGE 11 OF 15

PAGES OF STANDING ORDERS FOR EACH LEVEL

JAN 11 1971 - APPROXimate SITUATION REPORT - DAILY STATISTICS (001100Z JANUARY 11) PAGE 2 OF 4

JAN 11 1971

PATIENT STATISTICS FOR EACH LEVEL

05

		PATIENTS			PATIENTS		
		IN			OUT		
		ADMITTED			EVACUATED		
		1	2	3	4	5	6
ENTERED FACILITY		1	-	-	-	-	-
EVACUATED TO THIS FACILITY		2	2	3	24	1	1
TOTAL ADMISSIONS		0	42	151	33	226	0
REFUSED TO DAY - NO CDEV		0	0	0	32	32	0
- WITH DDEV		0	8	27	0	35	0
TOTAL		0	8	27	32	67	0
DIED - IN TREATMENT		3	2	2	2	2	0
- IN TREATMENT DDEV		0	0	0	3	3	0
- IN EVAC QUEUE		3	1	1	0	0	0
- IN TRANSIT		3	1	3	0	0	0
TOTAL		0	3	0	0	0	0
EVACUATED		3	25	99	1	125	3
TOTAL LEAVING		3	33	126	33	192	0
REMAINING AT END OF PERIOD		3	31	73	3	111	0
STABILIZED - NO TREATMENT ASSIGNED		0	0	0	1	0	0
- EVAC POLICY LIMIT		0	34	34	3	133	1
- NO BEGS		1	1	1	1	0	0
TOTAL		0	34	99	1	134	0
REMAINING IN STABILIZATION		0	23	0	0	23	0
CONVALESCENCE - ENTERED		0	8	91	2	59	1
- INCREASED		0	0	0	0	0	0
REMAINING IN CONVALESCENCE		0	11	74	3	69	3

NAME: II - COMBAT ZONE SIMULATION SUB-MODEL - DAILY STATISTICS DURING COMBAT PERIOD
 DAY 11 OF 15 36/17/77 PAGE 1 264

PATIENT STATISTICS FOR EACH LEVEL

405P

PATIENT STATISTICS FOR EACH LEVEL				PATIENT STATISTICS FOR EACH LEVEL			
	1	2	3	1	2	3	4
ENTERED FACILITY EVACUATED TO THIS FACILITY	3	3	1	24	24	3	3
TOTAL ADMISSIONS	115	53	104	7	275	1075	433
				31	300	1075	434
						225	2832
RETURNED TO DUTY - NO CONV	3	9	0	24	29	0	0
TOTAL	23	7	4	23	65	139	42
						93	223
							436
0100 - IN TREATMENT	1	8	1	2	12	50	44
- IN TREATMENT 20% - IN TREATMENT 20% - IN TREATMENT - IN TRANSIT	0	5	0	0	3	2	3
TOTAL	1	13	1	2	17	59	46
EVACUATED	67	13	46	3	132	633	34
TOTAL LEAVING	88	59	105	31	274	876	413
REMAINING AT END OF PERIOD	197	85	57	3	519	997	2513
STABILIZED - NO TREATMENT ASSIGNED	0	0	0	0	0	0	0
- ERIC POLICY LIMIT	90	32	45	3	167	712	243
- NO BEDS	21	8	51	3	83	223	104
TOTAL	111	40	46	3	247	935	432
REMANENT IN STABILIZATION	94	23	0	0	117	599	1
CONVALESCENCE - EQUIPMENT	72	14	8	0	36	243	127
REMANENT IN CONVALESCENCE	44	19	2	0	65	392	147
	111	62	57	3	211	118	579

WAGE: 11 - COMBAT ZONE SIMULATION MODEL
DAILY STATISTICS DURING COMBAT PERIOD

DAY 11

COMBAT 15

PAGE: 255

PATIENT DISPOSITION IN DAYS OF CONVALESCENCE LEVEL: HOSP

DAYS OF CONV.	BEDS REQUIRED	NO. TREATS ASSIGNED	EVAC POLICY	STANDBY		ON CALL		ON CALL		EVACUATION	
				NO. TREATS	EVAC	NO. TREATS	EVAC	NO. TREATS	EVAC	NO. TREATS	EVAC
1	1	1	EVAC	0	0	0	0	0	0	0	0
2	1	1	EVAC	0	0	0	0	0	0	0	0
3	1	1	EVAC	0	0	0	0	0	0	0	0
4	1	1	EVAC	0	0	0	0	0	0	0	0
5	1	1	EVAC	0	0	0	0	0	0	0	0
6	1	1	EVAC	0	0	0	0	0	0	0	0
7	1	1	EVAC	0	0	0	0	0	0	0	0
8	1	1	EVAC	0	0	0	0	0	0	0	0
9	1	1	EVAC	0	0	0	0	0	0	0	0
10	1	1	EVAC	0	0	0	0	0	0	0	0
11	1	1	EVAC	0	0	0	0	0	0	0	0
12	1	1	EVAC	0	0	0	0	0	0	0	0
13	1	1	EVAC	0	0	0	0	0	0	0	0
14	1	1	EVAC	0	0	0	0	0	0	0	0
15	1	1	EVAC	0	0	0	0	0	0	0	0
16	1	1	EVAC	0	0	0	0	0	0	0	0
17	1	1	EVAC	0	0	0	0	0	0	0	0
18	1	1	EVAC	0	0	0	0	0	0	0	0
19	1	1	EVAC	0	0	0	0	0	0	0	0
20	1	1	EVAC	0	0	0	0	0	0	0	0
21	1	1	EVAC	0	0	0	0	0	0	0	0
22	1	1	EVAC	0	0	0	0	0	0	0	0
23	1	1	EVAC	0	0	0	0	0	0	0	0
24	1	1	EVAC	0	0	0	0	0	0	0	0
25	1	1	EVAC	0	0	0	0	0	0	0	0
26	1	1	EVAC	0	0	0	0	0	0	0	0
27	1	1	EVAC	0	0	0	0	0	0	0	0
28	1	1	EVAC	0	0	0	0	0	0	0	0
29	1	1	EVAC	0	0	0	0	0	0	0	0
30	1	1	EVAC	0	0	0	0	0	0	0	0
31	1	1	EVAC	0	0	0	0	0	0	0	0
32	1	1	EVAC	0	0	0	0	0	0	0	0
33	1	1	EVAC	0	0	0	0	0	0	0	0
34	1	1	EVAC	0	0	0	0	0	0	0	0
35	1	1	EVAC	0	0	0	0	0	0	0	0
36	1	1	EVAC	0	0	0	0	0	0	0	0
37	1	1	EVAC	0	0	0	0	0	0	0	0
38	1	1	EVAC	0	0	0	0	0	0	0	0
39	1	1	EVAC	0	0	0	0	0	0	0	0
40	1	1	EVAC	0	0	0	0	0	0	0	0
41	1	1	EVAC	0	0	0	0	0	0	0	0
42	1	1	EVAC	0	0	0	0	0	0	0	0
43	1	1	EVAC	0	0	0	0	0	0	0	0
44	1	1	EVAC	0	0	0	0	0	0	0	0
45	1	1	EVAC	0	0	0	0	0	0	0	0

MARCH 11 - CONFIDENTIAL SIMULATION SUB-MODEL, DRAFTING CONTRACT (S-11)

	DAILY STATISTICS												DAILY STATISTICS												DAILY STATISTICS						
	DAY 11				DAY 12				DAY 13				DAY 14				DAY 15				DAY 16				DAY 17						
1	0	0	0	37	0	30	0	35	0	36	0	36	0	36	0	36	0	210	0	210	0	210	0	210	0	210	0	210	0	210	
2	1	2	3	57	1	51	1	53	1	56	1	56	1	56	1	56	1	212	1	212	1	212	1	212	1	212	1	212	1	212	
3	0	1	2	54	0	80	1	84	0	86	0	86	0	86	0	86	0	203	0	203	0	203	0	203	0	203	0	203	0	203	
4	1	2	1	59	2	82	2	84	2	84	2	84	2	84	2	84	2	210	0	210	0	210	0	210	0	210	0	210	0	210	
5	0	0	1	61	0	83	1	83	0	83	1	83	0	83	1	83	0	210	1	210	1	210	1	210	1	210	1	210	1	210	
6	1	3	1	52	1	83	1	83	1	85	1	85	1	85	1	85	1	210	1	210	1	210	1	210	1	210	1	210	1	210	
7	2	3	2	52	2	83	2	83	2	85	2	85	2	85	2	85	2	210	1	210	1	210	1	210	1	210	1	210	1	210	
8	3	4	1	63	0	83	0	83	2	85	1	85	1	85	1	85	1	210	1	210	1	210	1	210	1	210	1	210	1	210	
9	2	3	2	52	0	83	1	83	0	83	1	83	0	83	1	83	0	210	0	210	0	210	0	210	0	210	0	210	0	210	
10	3	2	2	65	3	83	3	83	3	85	3	85	3	85	3	85	3	210	1	210	1	210	1	210	1	210	1	210	1	210	
11	3	2	2	67	2	83	2	83	2	85	2	85	2	85	2	85	2	210	1	210	1	210	1	210	1	210	1	210	1	210	
12	0	0	0	57	0	83	0	83	0	83	0	83	0	83	0	83	0	210	1	210	1	210	1	210	1	210	1	210	1	210	
13	0	0	0	55	0	83	0	83	0	83	0	83	0	83	0	83	0	210	1	210	1	210	1	210	1	210	1	210	1	210	
14	0	0	0	56	0	83	0	83	1	83	1	83	1	83	1	83	1	210	1	210	1	210	1	210	1	210	1	210	1	210	
15	0	0	0	56	0	83	0	83	1	83	1	83	1	83	1	83	1	210	1	210	1	210	1	210	1	210	1	210	1	210	
16	0	0	0	57	0	83	0	83	0	83	0	83	0	83	0	83	0	210	1	210	1	210	1	210	1	210	1	210	1	210	
17	0	0	1	59	0	83	1	83	0	83	1	83	0	83	1	83	0	210	1	210	1	210	1	210	1	210	1	210	1	210	
18	0	0	1	71	0	83	1	83	1	83	1	83	1	83	1	83	1	210	1	210	1	210	1	210	1	210	1	210	1	210	
19	1	1	1	71	1	83	1	83	1	83	1	83	1	83	1	83	1	210	1	210	1	210	1	210	1	210	1	210	1	210	
20	0	0	1	72	0	83	1	83	1	83	0	83	1	83	0	83	1	210	1	210	1	210	1	210	1	210	1	210	1	210	
21	2	1	45	167	0	83	76	117	0	83	0	83	0	83	0	83	0	200	0	200	0	200	0	200	0	200	0	200	0	200	
TOTAL:	537	2	1	177	85	117	85	117	36	117	36	117	36	117	36	117	36	265	0	265	0	265	0	265	0	265	0	265	0	265	

THE JOURNAL OF CLIMATE

NAME: 11 - COMBAT 70 INC. SIMULATION SUB-MODEL. ---SIMULATION: 11-39
DAILY STATISTICS WORKING CONTRACT PERIOD
JUN 1977

DAY: 11
CONTRACT: 15
PAGE: 208

45 10 132 10 142 3 107 3 0 45 3 12 3 10 3 19 3

VEHICLE		STATISTICS		DAILY		RETURN		TIME		SIMULATON		DAY: 11		DATE: 16/17/77	
TYPE	HOME	TRIPS	IN USE	TRIP	AVG	TRIPS	IN USE	IN USE	TRIP	AVG	TRIPS	IN USE	IN USE	COMMIT PERIOD	
THE FOLLOWING VEHICLES ARE WAITING AT HOME															
AMBULANCE	345	1	8	12.244	1.531	.365	75	115.713	1.543	.314					
AMBULANCE	845	2	8	9.347	1.234	.330	79	121.486	1.535	.353					
AMBULANCE	845	3	9	11.526	1.281	.356	79	125.039	1.565	.343					
AMBULANCE	845	4	9	13.657	1.521	.455	73	118.131	1.495	.353					
AMBULANCE	845	7	7	12.133	1.715	.364	81	124.342	1.541	.370					
AMBULANCE	845	8	7	13.443	1.320	.375	68	120.271	1.763	.376					
AMBULANCE	C5	1	7	13.346	1.592	.316	53	131.159	1.452	.324					
AMBULANCE	C5	1	11	15.608	1.419	.425	93	136.477	1.415	.348					
AMBULANCE	C5	2	11	17.346	1.553	.395	42	129.489	1.412	.335					
AMBULANCE	C5	5	11	7.14	2.352	.185	43	98.172	2.243	.089					
AMBULANCE	H5P	1	6	12.454	2.081	.363	43	97.431	2.277	.089					
AMBULANCE	H5P	1	6	13.233	2.203	.400	42	95.772	2.283	.071					
AMBULANCE	H5P	1	6	12.933	2.162	.433	44	97.453	2.215	.117					
AMBULANCE	H5P	1	6	12.448	2.081	.253	43	98.531	2.203	.104					
AMBULANCE	H5P	1	7	13.940	1.330	.450	46	130.437	2.181	.081					
AMBULANCE	H5P	1	7	4.276	.301	.094	49	53.485	.061	.086					
HELICOPTER	POOL	7	7	4.213	.631	.117	49	53.247	.594	.195					
HELICOPTER	POOL	8	8	4.411	.931	.187	43	53.426	.633	.132					
HELICOPTER	POOL	8	8	4.410	.601	.102	49	53.221	.634	.234					
HELICOPTER	POOL	8	8	4.611	.631	.155	69	53.431	.601	.095					
HELICOPTER	POOL	8	8	4.811	.621	.132	93	53.745	.598	.133					
HELICOPTER	POOL	8	8	4.812	.621	.123	49	53.426	.633	.199					
HELICOPTER	POOL	8	8	4.410	.501	.110	59	53.473	.601	.037					
HELICOPTER	POOL	8	8	4.611	.531	.122	54	53.451	.603	.032					
HELICOPTER	POOL	8	8	4.611	.601	.112	93	53.363	.633	.133					
HELICOPTER	POOL	8	8	4.811	.631	.106	93	54.347	.611	.133					
HELICOPTER	POOL	8	8	4.812	.551	.104	70	54.041	.604	.031					
HELICOPTER	POOL	8	8	4.813	.631	.159	93	56.374	.631	.059					
HELICOPTER	POOL	8	8	4.811	.601	.114	90	53.443	.598	.031					
HELICOPTER	POOL	8	8	4.811	.531	.114	41	54.121	.603	.031					
HELICOPTER	POOL	8	8	4.811	.631	.142	93	54.131	.604	.137					
THE FOLLOWING VEHICLES ARE OUT															
AMBULANCE	2	2	11	17.764	1.615	.465	95	135.403	1.593	.335					
AMBULANCE	345	5	11	13.446	1.345	.449	75	122.437	1.632	.343					
AMBULANCE	845	4	6	4.411	1.641	.285	73	115.555	1.622	.345					
AMBULANCE	25	2	8	14.841	1.460	.641	56	134.533	1.566	.337					
AMBULANCE	C5	3	8	11.287	1.411	.363	42	121.737	1.485	.375					
AMBULANCE	C5	3	9	15.444	1.494	.664	79	125.174	1.583	.307					
AMBULANCE	345	6	7	12.724	1.813	.475	41	136.117	1.656	.377					
AMBULANCE	25	1	9	12.457	1.387	.363	94	132.294	1.503	.350					
AMBULANCE	25	3	9	15.644	1.521	.550	62	126.234	1.640	.304					

NAME, II - COMBAT ZONE SIMULATION 308-MODEL DAILY STATISTICS DURING COMBAT PERIOD

PAGE 1 274

VEHICLE REQUIREMENTS			DAILY			GLOBAL			
LEVEL	VEHICLE Type	NUMBER MADE BY A HONORED	NUMBER OF REQUESTS PLACED ON A HONORED	PICKUP TRIPS EN ROUTE	STOPS EN ROUTE	NUMBER OF REQUESTS MADE BY C HONORED	PLACED ON A HONORED	PIGUP TRIPS EN ROUTE	STOP TRIPS EN ROUTE
FEBB	HELICOPTER	125	125	0	0	1741	1413	0	0
	AMBULANCE	243	126	3	126	3535	1135	3	0
BAS	HELICOPTER	1	1	0	0	12	3	0	0
	AMBULANCE	112	42	332	74	745	346	4290	690
CS	HELICOPTER	1	1	0	0	5	5	0	0
	AMBULANCE	75	31	333	69	31	195	547	243
MOSP	HELICOPTER	1	1	0	0	115	0	0	0
	AMBULANCE	0	0	244	36	0	131	0	0
POOL	HELICOPTER	125	125	0	0	1754	1431	0	0
	AMBULANCE	0	0	0	0	0	0	0	0

TABLE 11 - COMPARISON SIMULATION RESULTS
SOLARY STATISTICS DURING COMBAT PERIOD

IN-DAY ARRIVALS

	HOURS OF DAY																								
DAY.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
2.	5	9	7	5	3	21	33	32	57	55	42	61	29	20	54	55	54	54	54	54	54	54	54	54	54
3.	5	3	5	6	1	12	31	25	34	34	26	13	18	92	46	55	43	20	24	18	9	7	5	3	519.
4.	3	3	3	1	2	3	13	16	16	25	12	6	5	14	15	16	13	20	11	9	9	1	1	3	1.
5.	1	2	4	1	6	11	9	10	14	9	9	7	7	9	11	20	15	4	6	5	0	2	1	6.	157.
6.	1	0	5	6	17	14	35	17	23	11	13	16	23	23	23	23	23	23	15	13	9	15	13	4	5.
7.	1	3	2	2	6	13	1	2	20	17	18	12	5	3	16	10	23	15	9	15	13	4	5	4	227.
8.	2	0	3	1	11	15	7	15	21	12	13	10	7	5	16	25	15	9	8	6	2	4	1	5.	218.
9.	1	1	1	1	2	4	1	9	14	4	4	3	4	5	5	5	5	8	6	6	5	3	3	1	433.
10.	3	2	1	3	7	17	12	25	22	23	13	3	6	12	22	24	19	11	16	5	4	3	1	1.	257.
11.	5	3	2	6	9	17	25	22	27	24	17	3	15	22	26	34	27	18	23	3	5	3	4	1.	359.
12.	3	1	2	4	13	5	15	17	9	7	9	4	7	15	21	9	9	6	2	3	1	1.	169.		
13.	3	1	1	3	3	3	0	4	2	3	2	1	3	2	4	5	9	6	4	3	1	0	0.	51.	
14.	0	4	0	0	3	2	0	5	4	2	3	0	5	7	5	1	4	3	2	1	3	0.	66.		
15.	1	3	2	1	1	1	6	5	2	1	3	2	2	2	4	4	2	2	1	1	1.	1.	50.		

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OUTPATIENT ADMISSIONS.

	H	D	U	R	S	O	F	D	A	M																
DAY 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26, TOTAL	
1.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26, TOTAL
2.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 140.
3.	2	3	5	3	5	3	5	2	6	121	7	2	117	7	3	3	3	3	3	3	3	3	3	3	3	3, 136.
4.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 150.
5.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 150.
6.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 127.
7.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 131.
8.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 145.
9.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 146.
10.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 146.
11.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 151.
12.	1	3	3	3	2	2	7	124	9	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2, 139.
13.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 151.
14.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 126.
15.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0, 146.

2111

NAME: II - COMBAT ZONE SIMULATION SUB-MODEL. ---SIMULATION: 11-3, DATE: 3-2
SUMMARY STATISTICS AFTER END OF COMBAT

PAGE 1 429

INPUTS
SUMMARY OF WORK UNIT REQUIREMENTS AND TREATER AVAILABILITY

WORK UNIT NUMBER	FIRMA	HAS	CS			MOSP		
			REQ ASGN	AVL DIED	REQ ASGN	AVL DIED	REQ ASGN	AVL DIED
1	3	3	3	3	3	3	3	3
2	3	3	6	33	24	65	57	45
3	0	0	0	1397	1397	0	2914	2495
4	2	2	0	0	0	0	0	0
5	2	2	2	2	2	616	581	37
6	2	2	3	118	148	137	213	219
7	2	2	0	0	0	0	0	0
8	3	3	2	35	35	35	451	451
9	0	0	4	694	694	694	491	491
10	3	3	2	3	3	12	12	41
11	3	3	1	3	2	0	533	533
12	0	0	3	13	19	19	0	277
13	0	0	3	0	0	0	80	80
14	3	3	2	49	49	43	43	43
15	3	3	2	2	2	2	2	2
16	0	0	6	6	6	0	0	226
17	2	2	6	45	45	45	0	226
18	2	2	1	2	2	51	51	43
19	1	1	1	24	24	24	24	24
20	3	3	8	1	0	0	0	0
21	1	1	2	2	2	2	2	2
22	0	0	3	0	0	0	0	0
23	2	2	3	1	2	2	2	2
24	2	2	1	1	1	1	1	1
25	0	0	3	0	0	0	0	0
26	2	2	9	9	9	9	9	9
27	1	1	2	2	2	43	43	37
28	2	2	3	2	2	2	2	2
29	0	0	3	645	645	911	51	47
30	2	2	3	2	2	0	9	9
31	2	2	3	35	35	33	345	345
32	2	2	2	3	2	112	112	112
33	1	1	2	782	782	792	0	1035
34	2	2	2	1	1	0	0	0
35	0	0	2	0	0	0	0	0
36	2	2	2	0	0	0	0	0
37	2	2	1	1	1	1	1	1
38	0	0	6	0	0	0	0	0
39	2	2	2	0	0	0	0	0
40	2	2	1	1	1	1	1	1
41	2	2	2	17	94	44	44	44
42	0	0	9	0	0	0	0	0
43	2	2	2	40	40	40	0	0

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NAME: II - COMBAT ZONE SIMULATION SUB-MODEL. ---SIMULATION 11-14 DAY: 30
SUMMARY STATISTICS AFTER END OF COMBAT PAGE: 631

SUMMARY OF WORK UNIT REQUIREMENTS AND TREATER AVAILABILITY

WORK UNIT NUMBER	FIBA				DAS				CS				HOSP			
	AU REQ	TREATER ASGN	AVL	DIED	AU REQ	TREATER ASGN	AVL	DIED	AU REQ	TREATER ASGN	AVL	CLOS	AU REQ	TREATER ASGN	AVL	DIED
1	2	2	2	0	115	115	15	0	18	18	0	0	11	11	0	0
2	1	1	1	0	453	453	0	452	499	499	0	0	63	63	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	317	317	0	0
4	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	292	292	0	0	494	494	0	0	395	395	0	0
6	2	2	2	2	81	81	82	0	77	77	77	0	47	47	0	0
7	3	3	3	3	1	1	0	0	0	0	0	0	0	0	0	0
8	2	2	2	2	307	307	307	0	538	538	538	0	156	156	0	0
9	0	0	0	0	364	364	384	0	344	344	344	0	189	189	0	0
10	2	2	2	2	62	62	62	0	52	52	52	0	22	22	0	0
11	2	2	2	2	192	192	193	0	157	167	167	0	79	79	0	0
12	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
13	2	2	2	2	6	6	5	4	0	4	4	0	9	9	0	0
14	2	2	2	2	1	1	1	0	1	1	1	0	1	1	0	0
15	1	1	1	1	1	1	1	0	2	2	2	0	2	2	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	2	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0
18	2	2	2	2	0	0	136	136	0	102	102	102	0	51	51	0
19	2	2	2	2	2	2	2	0	2	2	2	0	2	2	0	0
20	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
21	2	2	2	2	2	2	2	0	1	1	1	0	2	2	0	0
22	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
23	2	2	2	2	2	2	2	0	1	1	1	0	2	2	0	0
24	2	2	2	2	2	2	2	0	2	2	2	0	2	2	0	0
25	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
26	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
27	2	2	2	2	1	1	1	0	1	1	1	0	2	2	0	0
28	2	2	2	2	1	1	1	0	2	2	2	0	2	2	0	0
29	2	2	2	2	0	0	136	136	113	0	102	102	60	0	51	51
30	2	2	2	2	2	2	1	1	3	3	3	2	9	9	3	3
31	2	2	2	2	2	2	2	182	182	182	0	168	168	183	0	99
32	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
33	2	2	2	2	5	5	5	314	314	314	1	1	1	1	1	1
34	0	0	0	0	0	0	0	7	0	0	0	2	2	1	1	1
35	0	0	0	0	0	0	0	7	0	0	0	15	0	27	27	18
36	1	1	1	1	2	2	2	15	2	1	32	32	32	0	12	12
37	2	2	2	2	2	2	2	0	2	2	2	2	2	2	0	0
38	2	2	2	2	2	2	2	0	0	0	194	194	182	149	149	149
39	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
40	2	2	2	2	2	2	2	0	2	2	2	2	2	2	0	0
41	2	2	2	2	2	2	2	0	61	61	55	55	29	29	0	0
42	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
43	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0

NAME: 11 - COMBAT ZONE SIMULATION SUB-MODEL. ---SIMULATION: 11-3, PAGE 30
SUMMARY STATISTICS AFTER END OF COMBAT
DATE: 11-17-1985
TIME: 15:17:17
COMBAT: 15

NAME: 11 - COMBAT ZONE SIMULATION SUB-MODEL, ----SIMULATION NUMBER: DAY: 30
SUMMARY STATISTICS AFTER END OF COMBAT DAY: 30 COMMAT: 15

PATIENT DISPOSITION SUMMARY BY DAYS OF CONVALESCENCE - LEVEL 1 IAS

DAYS OF CONV.	BEADS REQUIRED	PATIENT STATISTICS AFTER END OF COMBAT			CONVALESCENCE 1-15			CONVALESCENCE 16-30			EVACUATION		
		NO TREAT.	EVAC. POLICY	REMAIN. SHORTAGE	NO TREAT.	EVAC. POLICY	REMAIN. SHORTAGE	NO TREAT.	EVAC. POLICY	REMAIN. SHORTAGE	NO TREAT.	EVAC. POLICY	REMAIN. SHORTAGE
1	0	0	161	161	0	0	0	0	0	0	0	0	0
2	1	161	191	191	3	0	9	4	0	0	0	163	169
3	2	161	143	334	2	44	23	2	1	1	1	163	142
4	3	161	115	452	2	45	25	2	1	1	1	163	331
5	4	161	115	519	2	56	26	2	1	1	1	163	118
6	5	161	107	519	2	52	32	2	1	1	1	163	449
7	6	161	73	529	2	52	35	2	1	1	1	163	556
8	7	161	73	752	2	52	41	2	1	1	1	163	137
9	8	161	48	752	2	52	44	2	1	1	1	163	710
10	9	161	34	852	2	52	45	2	1	1	1	163	769
11	10	161	40	872	2	52	47	2	1	1	1	163	70
12	11	161	23	895	2	52	48	2	1	1	1	163	73
13	12	161	22	917	2	52	51	2	1	1	1	163	559
14	13	161	51	945	2	52	51	2	1	1	1	163	937
15	14	161	31	978	2	52	51	2	1	1	1	163	48
16	15	161	14	992	2	52	51	2	1	1	1	163	939
17	16	161	21	1113	2	52	51	2	1	1	1	163	43
18	17	161	25	1038	2	52	50	2	1	1	1	163	1329
19	18	161	15	1151	2	52	51	2	1	1	1	163	23
20	19	161	16	1064	2	52	51	2	1	1	1	163	1074
21	20	161	21	1192	2	52	53	2	1	1	1	163	31
22	21	161	9	1194	2	52	53	2	1	1	1	163	1135
23	22	161	15	1144	2	52	55	2	1	1	1	163	14
24	23	161	11	1125	2	52	55	2	1	1	1	163	1170
25	24	161	8	1131	2	52	55	2	1	1	1	163	25
26	25	161	16	1164	2	52	55	2	1	1	1	163	1195
27	26	161	8	1164	2	52	55	2	1	1	1	163	1210
28	27	161	9	1154	2	52	55	2	1	1	1	163	1226
29	28	161	5	1145	2	52	55	2	1	1	1	163	1242
30	29	161	4	1171	2	52	55	2	1	1	1	163	1258
31	30	161	5	1177	2	52	55	2	1	1	1	163	1274
32	31	161	5	1162	2	52	55	2	1	1	1	163	1290
33	32	161	2	1164	2	52	55	2	1	1	1	163	1306
34	33	161	5	1149	2	52	55	2	1	1	1	163	1341
35	34	161	6	1197	2	52	57	2	1	1	1	163	1346
36	35	161	5	1222	2	52	54	2	1	1	1	163	1354
37	36	161	6	1207	2	52	54	2	1	1	1	163	1359
38	37	161	4	1241	2	52	52	2	1	1	1	163	1364
39	38	161	7	1243	2	52	52	2	1	1	1	163	1375
40	39	161	1	1249	2	52	52	2	1	1	1	163	1376
41	40	161	6	1225	2	52	52	2	1	1	1	163	1382
42	41	161	5	1228	2	52	52	2	1	1	1	163	1385
43	42	161	5	1233	2	52	52	2	1	1	1	163	1390
44	43	161	1	1234	2	52	52	2	1	1	1	163	1391

NAME: II - COMBAT ZONE SIMULATION SUB-MODEL		SUMMARY STATISTICS AFTER END OF COMBAT		SIMULATION: II-39		DATE: 31		COMBAT: 15		JUN/1977		PAGE# 435	
45	161	2 1236	0	0	60	0	0	0	0	2 1233	0	2	1393
46	161	5 1254	1	1	61	1	1	1	1	1 1256	1	0	1390
47	161	3 1242	1	1	61	1	1	1	1	1 1239	0	0	1399
48	161	6 1248	2	0	62	0	0	0	0	1 1245	2	0	1405
49	161	4 1252	0	0	62	0	0	0	0	1 1249	1	0	1409
50	161	3 1242	2	0	62	0	0	0	0	1 1249	2	0	1409
51	161	4 1256	1	1	63	1	1	1	1	1 1252	0	3	1412
52	161	1 1257	0	0	63	0	0	0	0	1 1253	1	1	1413
53	161	4 1261	0	2	63	0	0	0	0	1 1257	0	0	1417
54	161	5 1266	0	0	64	0	0	0	0	1 1262	1	1	1422
55	161	4 1273	2	2	65	2	2	2	2	1 1266	2	2	1426
56	161	2 1272	2	0	65	2	2	2	2	1 1268	0	0	1428
57	161	2 1274	0	0	65	0	0	0	0	2 1273	3	3	1430
58	161	5 1279	0	1	67	0	0	0	0	5 1275	1	0	1435
59	161	4 1283	1	3	67	1	3	1	1	1 1279	1	1	1439
60	161	3 1286	3	3	67	3	3	3	3	3 1282	0	0	1442
61	161	1 1287	2	0	67	0	0	0	0	2 1283	1	1	1443
62	161	1 1394	1	3	77	0	0	0	0	0 107	0	0	107 1553
TOTAL:	3	161	1548	1	77	0	0	0	0	160	1390	0	1550

NAMES 11 - COMBAT ZONE SIMULATION SUB-MODEL,
SUMMARY STATISTICS AFTER END OF COMBAT

PAGE 4 437

JULY 1977
DATE 15
COMBAT 15

PATIENT DISPOSITION SUMMARY BY DAYS OF CONVALESCENCE - LEVEL 1-25

DAYS OF CONV.	REJSOS REQUIRED	NO TREAT ASSIGNED	EVAC POLICY	SUSTAINABILITY			CONV. SEQUENCE			EVACUATION		
				EVAC RED	REMAIN IN STBZ	SURGAGE	ENROUTE	CONV. ONLY	IN CONV.	NO TREAT ASSIGNED	REMAIN IN CONV.	EVAC BED POLICY
1	1	0	15	15	1	0	0	0	0	12	15	0
2	1	0	15	15	2	1	252	252	2	15	15	1
3	1	0	15	15	2	1	194	440	2	15	15	1
4	2	0	15	15	0	0	157	603	0	157	1111	3
5	3	1	15	15	0	5	0	0	0	0	135	4
6	3	1	15	15	0	5	0	0	0	0	135	4
7	4	1	15	15	2	5	0	0	0	0	135	4
8	4	1	15	15	2	5	0	0	0	0	135	4
9	5	1	15	15	2	5	0	0	0	0	135	4
10	5	1	15	15	2	5	0	0	0	0	135	4
11	5	1	15	15	2	5	0	0	0	0	135	4
12	6	1	15	15	2	5	0	0	0	0	135	4
13	6	1	15	15	2	5	0	0	0	0	135	4
14	7	1	15	15	2	5	0	0	0	0	135	4
15	7	1	15	15	2	5	0	0	0	0	135	4
16	8	1	15	15	2	5	0	0	0	0	135	4
17	8	1	15	15	2	5	0	0	0	0	135	4
18	9	1	15	15	2	5	0	0	0	0	135	4
19	9	1	15	15	2	5	0	0	0	0	135	4
20	10	1	15	15	2	5	0	0	0	0	135	4
21	10	1	15	15	2	5	0	0	0	0	135	4
22	11	1	15	15	2	5	0	0	0	0	135	4
23	12	1	15	15	2	5	0	0	0	0	135	4
24	12	1	15	15	2	5	0	0	0	0	135	4
25	13	1	15	15	2	5	0	0	0	0	135	4
26	13	1	15	15	2	5	0	0	0	0	135	4
27	14	1	15	15	2	5	0	0	0	0	135	4
28	14	1	15	15	2	5	0	0	0	0	135	4
29	15	1	15	15	2	5	0	0	0	0	135	4
30	15	1	15	15	2	5	0	0	0	0	135	4
31	16	1	15	15	2	5	0	0	0	0	135	4
32	16	1	15	15	2	5	0	0	0	0	135	4
33	17	1	15	15	2	5	0	0	0	0	135	4
34	17	1	15	15	2	5	0	0	0	0	135	4
35	18	1	15	15	2	5	0	0	0	0	135	4
36	18	1	15	15	2	5	0	0	0	0	135	4
37	19	1	15	15	2	5	0	0	0	0	135	4
38	19	1	15	15	2	5	0	0	0	0	135	4
39	20	1	15	15	2	5	0	0	0	0	135	4
40	20	1	15	15	2	5	0	0	0	0	135	4
41	21	1	15	15	2	5	0	0	0	0	135	4
42	21	1	15	15	2	5	0	0	0	0	135	4
43	22	1	15	15	2	5	0	0	0	0	135	4

4445, 11 - COM341 ONE SIMULATION SUB-MODEL		SUMMARY STATISTICS AFTER		SIMULATION 11-39		DAY: 50		COM341: 15		PAGE: 438	
		END OF COM341		END OF COM341		END OF COM341		END OF COM341		END OF COM341	
44	15	7 1159	1	5	1	49	0	605	0	0 1111	0
45	2 15	4 1163	2	5	1	85	2	523	2	0 1111	2
46	0 15	4 1067	3	5	0	62	0	635	2	0 1111	2
47	2 15	8 1175	2	5	3	64	0	645	2	0 1111	2
48	3 15	6 1181	2	5	1	93	2	545	2	0 1111	2
49	4 15	2 1043	2	5	1	91	2	545	2	0 1111	2
50	0 15	6 1089	2	5	2	95	0	605	2	0 1111	2
51	1 15	3 1152	1	5	1	94	1	635	1	0 1111	1
52	3 15	6 1198	2	5	2	95	2	635	2	0 1111	2
53	0 15	5 1106	0	5	1	97	0	235	0	0 1111	0
54	3 15	7 1113	0	5	1	94	0	605	0	0 1111	0
55	1 15	4 1117	1	5	2	94	2	625	2	0 1111	2
56	2 15	3 1123	2	5	2	95	2	645	2	0 1111	2
57	0 15	6 1125	2	5	0	93	0	605	0	0 1111	0
58	2 15	4 1129	1	5	2	93	0	605	0	0 1111	0
59	3 15	4 1134	2	5	1	93	3	635	3	0 1111	3
60	2 15	1 1134	2	5	1	94	2	625	2	0 1111	2
61	3 15	2 1134	2	5	57	155	0	605	0	0 1111	0
TOTAL:	1121	15	1541	2	155	613	155	1111	155	1343	1359

NAME: 11 - COMBAT / Date: SIMULATION SUB-MODEL, 22-SIMULATION: 11-19 DAY: 55 COMBAT: 15

PATIENT DISPOSITION SUMMARY BY DAYS OF GONVALESCENCE - LEVEL: 1-15-p

DAYS OF CONV.	REDS RECORDED	NO PEARL ASSIGNED	EVAC POLICY	REMAIN IN STAB SABRAGE	CONVALESCENCE		EVACUATION		TOTAL EVACUATED
					ENCL. CONV. ONLY	IN CONV. ONLY	NO TREAT ASSIGNED	EVAC BED SABRAGE	
1	3	3	3	3	3	3	3	3	0
1 1155	1155	0	0	63	69	39	63	1	24
2 1358	2223	2	2	53	122	38	123	1	36
3 394	5213	3	3	31	153	15	92	3	12
4 397	4150	3	3	0	0	139	252	27	56
5 765	4925	0	0	0	54	376	15	134	20
6 649	5574	2	2	116	492	21	154	50	102
7 504	5378	1	1	58	550	8	162	39	154
8 425	5535	2	2	0	71	621	15	177	51
9 329	5832	2	2	1	41	692	6	183	32
10 277	7139	2	2	1	55	717	13	193	423
11 234	7313	2	2	1	33	750	3	196	423
12 163	7476	3	2	0	36	746	12	203	423
13 112	7594	2	2	2	27	813	3	211	423
14 77	7671	0	0	0	33	646	5	216	423
15 27	7646	2	2	2	22	668	3	219	423
16				37	1	668	3	227	423
17				76	1	966	12	239	423
18				50	105	0	658	13	516
19				3	136	0	868	8	516
20				2	43	176	3	567	516
21				0	0	14	190	0	516
22				3	13	332	0	347	516
23				2	34	246	0	356	516
24				0	9	347	9	317	516
25				2	26	272	0	356	516
26				2	22	294	3	356	516
27				0	25	319	3	356	516
28				3	11	332	0	356	516
29				2	19	356	0	356	516
30				0	8	356	0	356	516
31				2	6	356	0	356	516
32				2	4	356	0	356	516
33				0	2	356	0	356	516
34				3	1	356	0	356	516
35				1	0	356	0	356	516
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51				0	0	356	0	356	516
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55				0	0	356	0	356	516
56				0	0	356	0	356	516
57				0	0	356	0	356	516
58				0	0	356	0	356	516
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152				0	0	356	0	356	516
153				0	0	356	0	356	516
154				0	0	356	0	356	516
155				0	0	356	0	356	516
156				0	0	356	0	356	516
157				0	0	356	0	356	516

NAME: 11 - COMBAT 10HR SIMULATION SUIT-MODEL		SUMMARY STATISTICS AFTER END OF COMBAT		SIMULATION: II-59		DATE: 11/17/77		COST: 11:15		PAGE: 44)	
44	45	46	47	48	49	50	51	52	53	54	55
0	0	1+	613	0	366	3	504	0	574	0	613
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2	2	3	631	2	468	0	514	2	574	1	3556
3	3	4	645	2	864	4	524	0	574	2	5566
4	4	5	659	3	865	13	526	0	574	2	5566
5	5	6	663	3	866	13	526	0	574	2	5566
6	6	7	668	3	866	13	526	0	574	2	5566
7	7	8	668	2	866	3	534	0	574	1	5566
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9	9	10	672	2	866	3	534	0	574	1	5566
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13	13	14	672	2	866	3	534	0	574	1	5566
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84	84	85	672	2	866	3	534	0	574	1	5566
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86	86	87	672	2	866	3	534	0	574	1	5566
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89	89	90	672	2	866	3	534	0	574	1	5566
90	90	91	672	2	866	3	534	0	574	1	5566
91	91	92	672	2	866	3	534	0	574	1	5566
92	92	93	672	2	866	3	534	0	574	1	5566
93	93	94	672	2	866	3	534	0	574	1	5566
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99	99	100	672	2	866	3	534	0	574	1	5566
100	100	101	672	2	866	3	534	0	574	1	5566
101	101	102	672	2	866	3	534	0	574	1	5566
102	102	103	672	2	866	3	534	0	574	1	5566
103	103	104	672	2	866	3	534	0	574	1	5566
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116	116	117	672	2	866	3	534	0	574	1	5566
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122	122	123	672	2	866	3	534	0	574	1	5566
123	123	124	672	2	866	3	534	0	574	1	5566
124	124	125	672	2	866	3	534	0	574	1	5566
125	125	126	672	2	866	3	534	0	574	1	5566
126	126	127	672	2	866	3	534	0	574	1	5566
127	127	128	672	2	866	3	534	0	574	1	5566
128	128	129	672	2	866	3	534	0	574	1	5

NAMES II - COMBAT ZONE SIMULATION SUB-MODULE
SUMMARY STATISTICS AFTER END OF COMBAT

SIMULATION II-39 DATE 30 JUN 1977
DAILY SUMMARY - STABILIZATION, EVACUATION, CONVALESCENCE AND BED STATISTICS

LEVEL I FFBIA

DAYS AFTER A D- DAY CURE	PATIENT NO.	STABILIZATION...			EVACUATION...			CONVALESCENCE...			BED STATISTICS...			
		ADMISSION TR.	NO. PLCY	BED TOTAL	EVAC NO. TP.	IN TP.	NO. BED TOTAL	ENTR ONLY	IN TP.	20W STAZ	TOTAL INCP	REMAINING...	PERCENT OCCUPANCY	CAPACITY
1	L 312	312	0	0	0	0	0	0	0	229	0	0	0	0
2	L 713	1329	0	0	0	0	0	0	0	542	0	0	0	0
3	L 544	1613	1	1	1	1	1	1	1	495	2	2	2	2
4	L 233	1926	2	2	2	2	2	2	2	232	2	2	2	2
5	L 228	2134	0	0	0	0	0	0	0	157	0	0	0	0
6	L 371	2534	1	1	1	1	1	1	1	308	0	0	0	0
7	L 290	2744	0	0	0	0	0	0	0	222	0	0	0	0
8	L 292	3246	1	1	1	1	1	1	1	213	0	0	0	0
9	L 164	3253	1	1	1	1	1	1	1	97	0	0	0	0
10	L 337	3587	2	2	2	2	2	2	2	257	0	0	0	0
11	L 416	4003	3	3	3	3	3	3	3	351	0	0	0	0
12	L 234	4237	2	2	2	2	2	2	2	169	0	0	0	0
13	L 122	4359	1	1	1	1	1	1	1	46	0	0	0	0
14	L 132	4444	0	0	0	0	0	0	0	61	0	0	0	0
15	L 131	4622	1	1	1	1	1	1	1	46	0	0	0	0
16	L 3	4622	1	1	1	1	1	1	1	7	0	0	0	0
17	L 3	4622	1	1	1	1	1	1	1	3	0	0	0	0
18	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
19	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
20	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
21	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
22	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
23	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
24	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
25	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
26	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
27	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
28	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
29	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0
30	L 3	4622	0	0	0	0	0	0	0	9	0	0	0	0

44-63-11 - CIVILIAN CASUALTY STABILIZATION SUMMARY SITUATION REPORT: 11-3
SUMMARY STATISTICS AFTER END OF COMBAT DATE 10 CO. 111, 15
DRAFT

DAILY SUMMARY - STABILIZATION, EVACUATION, CONVALESCENCE AND MED STATISTICS LEVEL 1 HAS

DAYS	PATIENTS	STABILIZATION			EVACUATION			CONVALESCENCE			REMANENT			BED STATISTICS		
		AFTER ADMISSION	NO. EVAC NO.	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	NO. PLACED	CAPACITY
1	6	107	11	79	0	69	10	72	0	62	0	2	5	2	2	0
2	6	301	438	18	252	0	276	14	245	0	259	0	5	15	3	3
3	6	239	645	11	144	2	205	11	201	2	212	2	17	17	2	2
4	6	114	758	3	52	1	121	9	98	1	117	1	8	13	2	2
5	6	132	856	13	64	6	74	13	67	0	70	0	7	8	2	2
6	6	159	946	4	114	1	125	4	120	2	124	2	9	7	2	2
7	6	122	1117	10	44	3	104	12	91	1	111	1	6	13	1	1
8	6	112	1229	4	44	3	99	6	95	2	111	2	4	4	1	1
9	6	76	1333	17	36	1	51	17	59	0	56	2	8	8	1	1
10	6	124	1432	13	115	2	113	13	112	2	112	2	7	7	0	0
11	6	134	1616	15	144	0	159	15	136	0	151	0	4	4	0	0
12	6	32	1738	11	64	2	75	11	75	2	86	2	7	12	1	1
13	6	54	1762	6	14	1	27	8	15	2	23	2	2	1	1	1
14	6	33	1745	5	17	6	23	6	14	1	24	1	1	7	1	1
15	6	43	1844	16	15	0	30	13	20	2	33	2	2	4	1	1
16	6	5	1853	2	6	1	6	1	5	1	6	1	6	6	1	1
17	6	2	1852	2	2	1	3	1	3	1	3	1	3	3	1	1
18	6	4	1850	0	3	0	0	0	0	0	0	0	0	0	0	0
19	6	3	1851	2	1	1	2	1	2	0	2	0	2	2	1	1
20	6	0	1850	0	2	1	1	1	1	1	1	1	1	1	1	1
21	6	2	1852	1	1	1	2	1	2	1	2	1	2	2	1	1
22	6	3	1851	1	1	1	2	1	2	1	2	1	2	2	1	1
23	6	0	1853	1	1	1	2	1	2	1	2	1	2	2	1	1
24	6	0	1850	0	2	1	1	1	1	1	1	1	1	1	1	1
25	6	2	1853	1	1	1	2	1	2	1	2	1	2	2	1	1
26	6	2	1852	1	1	1	2	1	2	1	2	1	2	2	1	1
27	6	0	1850	0	2	1	1	1	1	1	1	1	1	1	1	1
28	6	3	1853	0	2	1	1	1	1	1	1	1	1	1	1	1
29	6	2	1852	1	1	1	2	1	2	1	2	1	2	2	1	1
30	6	2	1853	1	1	1	2	1	2	1	2	1	2	2	1	1

NAME: 11 - COMBAT TONE SITUATION SUBJECT: ---SIMULATION UNIT DAY 30 COMBAT 15
Subject Statistics After End of Combat

DAILY SUMMARY - STABILIZATION, EVACUATION, CONVALESCENCE AND RFD STATISTICS LEVEL 1 GS

DAYS AFTER	PATIENT NO	STABILIZATION...			EVACUATION...			CONVALESCENCE AND RFD STATISTICS			REMAINING...			BEU STATISTICS...					
		ADMISSION	NO SVAC	NO	NO EVAC	NO	CNV	IN	OUT	STAR	CONV	INITIAL	REQUIREMENT	IN 14	CUMUL	ADMISSIONS	OCCUPANCY	CAPACITY	
D-DAV	C-DAY	CUMUL	TR.	PLCY	ED	TOTAL	ED	STAR	CONV	INITIAL	REQUIREMENT	IN 14	CUMUL	ADMISSIONS	OCCUPANCY	CAPACITY			
1	L 140	140	2	40	0	82	2	68	0	73	39	3	10	30	32	30	21.43	33	
2	L 362	512	1	233	0	234	1	218	0	219	101	0	24	119	186	119	23.71	160	
3	L 339	611	1	172	2	172	3	183	3	183	97	3	7	15	163	143	23.13	163	
4	L 171	532	2	115	5	111	2	115	4	114	55	1	1	4	114	127	122	12.42	160
5	L 121	113	2	61	0	61	2	63	0	65	22	0	0	6	67	74	63	6.37	160
6	L 231	1314	1	171	2	122	1	111	2	112	51	0	4	16	64	62	71	5.44	160
7	L 161	1465	2	77	3	73	2	86	3	86	41	1	1	10	75	85	75	5.42	160
8	L 162	1627	2	64	2	64	2	66	2	66	44	3	2	92	82	92	504	160	11.46
9	L 38	1725	3	59	4	59	4	40	3	40	17	3	3	6	57	57	57	3.33	160
10	L 163	1894	2	94	2	94	2	96	2	96	42	3	2	11	65	76	65	3.43	160
11	L 226	2420	1	135	0	134	1	124	0	125	53	2	2	23	69	89	42	89	160
12	L 134	2254	1	68	2	70	1	79	2	63	37	2	2	13	81	81	559	81	160
13	L 53	2313	1	17	1	14	1	25	1	26	5	2	2	46	44	46	1.99	160	
14	L 62	2376	2	25	0	27	2	21	0	23	7	2	2	5	14	24	18	7.56	160
15	L 64	2459	0	14	0	14	0	20	0	20	11	3	3	3	15	15	15	.62	160
16	L 3	2445	1	5	1	5	1	5	2	8	1	3	3	3	12	13	*4.1	11	160
17	L 3	2446	0	2	2	2	2	3	1	3	1	3	3	3	7	6	*25	6	160
18	L 3	2448	0	9	0	9	0	5	0	9	0	9	0	9	2	2	*38	2	160
19	L 3	2448	1	4	1	4	1	3	0	3	0	3	0	3	0	0	0	0	160
20	L 0	2448	0	3	0	3	0	3	0	3	1	1	1	1	1	1	1	1	160
21	L 3	2444	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	160
22	L 3	2444	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	160
23	L 3	2448	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	160
24	L 0	2448	0	8	0	8	0	8	0	8	1	2	2	2	2	2	2	2	160
25	L 0	2448	1	2	1	2	1	2	1	2	1	2	1	2	1	1	1	1	160
26	L 3	2444	2	2	1	2	1	2	1	2	1	2	1	2	1	1	1	1	160
27	L 0	2446	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160
28	L 3	2445	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160
29	L 3	2444	2	2	1	2	1	2	1	2	1	2	1	2	1	1	1	1	160
30	L 3	2444	2	2	1	2	1	2	1	2	1	2	1	2	1	0	0	0	160

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NAME: II - COMBAT ZONE SIMULATION SUB-MODEL
SUMMARY STATISTICS AFTER END OF COMBAT

DAY: 30 COMBAT 15
LEVEL: HIGH

DAILY SUMMARY - SANITIZATION, VACUATION, COVAC SCENE AND BED STATISTICS

DAYS AFTER A DAY	PATIENT NO. IN JURIS	STABILIZATION			EVACUATION			COVAC			REMANING			BED STATISTICS				
		PLUG BED	TOILET	PLC	EVAC NO.	NO. IN JURIS												
1	L 234	234	J	97	1	39	3	39	72	1	63	58	72	35.29	72	35.29	234	
2	L 534	734	J	235	42	323	2	156	236	132	3	63	163	203	372	279	36.01	200
3	L 434	1138	J	210	137	347	0	226	93	322	45	3	131	173	532	532	34.45	233
4	L 254	1392	J	129	105	234	0	145	105	290	15	0	53	103	233	36.9	33.59	233
5	L 154	1546	J	76	55	131	2	47	47	146	24	2	28	67	233	264	31.57	233
6	L 256	1832	J	146	93	233	0	47	53	155	23	2	52	122	233	322	32.2	233
7	L 292	2004	J	112	68	143	0	144	36	180	34	0	45	93	233	234	29.25	200
8	L 187	2131	J	93	76	166	2	121	35	139	34	0	31	76	233	234	9.95	233
9	L 107	2298	J	46	43	75	21	96	75	24	39	2	15	33	233	234	21.15	233
10	L 234	2532	J	125	62	187	3	74	41	116	34	0	41	63	233	234	482	19.36
11	L 333	2832	J	167	68	247	0	134	51	182	35	0	65	117	233	234	507	17.43
12	L 191	3023	J	94	53	147	3	154	27	35	35	0	31	21	233	234	7.35	233
13	L 32	3065	J	24	14	58	0	66	64	63	27	0	12	13	233	234	490	16.21
14	L 77	3162	J	36	2	56	3	26	3	25	15	0	16	24	193	213	461	14.96
15	L 51	3213	J	24	24	24	2	35	19	35	19	0	9	15	233	234	413	13.36
16	L 3	3222	J	4	4	4	0	4	19	19	1	0	4	2	233	234	276	19.36
17	L 3	3225	J	0	0	0	0	0	0	0	0	0	0	0	233	234	121	3.75
18	L 1	3226	J	3	3	3	0	3	3	3	3	0	2	2	233	234	183	5.57
19	L 0	3226	J	2	2	2	0	3	3	3	3	0	3	3	233	234	47	2.70
20	L 0	3226	J	0	0	3	0	0	0	0	0	0	0	0	233	234	119	6.22
21	L 0	3226	J	2	2	2	0	0	0	0	0	0	0	0	233	234	57	1.77
22	L 0	3226	J	1	1	1	1	1	1	1	1	0	1	1	233	234	46	1.43
23	L 0	3226	J	1	1	1	1	1	1	1	1	0	1	1	233	234	51	1.42
24	L 0	3226	J	0	0	0	0	0	0	0	0	0	0	0	233	234	36	1.12
25	L 0	3226	J	2	2	2	0	3	3	3	3	0	3	3	233	234	38	1.18
26	L 0	3226	J	0	0	0	0	0	0	0	0	0	0	0	233	234	27	0.87
27	L 0	3226	J	1	1	1	1	1	1	1	1	0	1	1	233	234	13	0.57
28	L 0	3226	J	2	2	2	0	3	3	3	3	0	3	3	233	234	8	0.25
29	L 0	3226	J	0	0	0	0	0	0	0	0	0	0	0	233	234	5	0.15
30	L 0	3226	J	0	0	0	0	0	0	0	0	0	0	0	233	234	1	0.03

END OF UNIT'S DURATION: THE COMBAT 200+

DAYS AFTER D-DAY	WHS ENDS AFTER REQUESTED D-DAY	DAYS ENDS AFTER REQUESTED D-DAY	BEDS AFTER REQUESTED D-DAY		BEDS AFTER REQUESTED D-DAY
			BEDS AFTER REQUESTED D-DAY	BEDS AFTER REQUESTED D-DAY	
1	34	24	122	47	109
2	245	25	1495	43	1051

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TABLE II - DATA FROM SIMULATION STUDY
SUMMARY STATISTICS AFTER END OF COMBAT

	5	560	26	1464	49	1034	72	173
5	852	27	1449	50	1114	73	44	
6	946	28	1414	51	1239	74	40	
7	1119	25	1355	52	935	75	29	
8	1264	13	1172	53	944	76	13	
9	1365	31	1147	54	975	77	11	
10	1424	52	1323	55	994	78	11	
11	1616	53	1327	56	938	79	12	
12	1635	54	1287	57	942	80	12	
13	1773	55	1256	58	923	81	12	
14	1819	36	1244	59	919	82	12	
15	1749	37	1244	60	936	83	12	
16	1757	48	1214	61	898	84	12	
17	1777	53	1202	62	657	85	12	
18	1732	62	1179	63	741	86	12	
19	1689	41	1162	64	659	87	12	
20	1651	42	1152	65	558	88	12	
21	1651	43	1135	66	498	89	12	
22	1630	44	1114	67	440	90	12	
23	1571	45	1134	68	373	91	12	
24	1543	46	1032	69	317	92	12	

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PERCENT FULL LICENSE PROTECTION

DATE: 11/11/81 - CONTAIN ZONE SIMULATION SUB-PROJEC^T - SUBJECT: 11-3
SUB-DATA STATISTICS AFTER END OF COMBAT

PAGE: 117

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DATA: SUBJECT - PATIENT DISPOSITIONS - LEVEL: 1A5

DAY	ADMISSIONS	EVACUATED	REFUSED TO DUTY	RETURNED TO DUTY	TOTAL	CURE	TOTAL CURE PERCENT	DAY	CURE	TOTAL CURE PERCENT										
0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	
1	0	27	32	80	1	17	17	17	15	69	3	3	3	3	32	42	76.0%	6	7.4%	
2	0	33	66	252	2	25	25	42	6	31	3	3	3	3	259	341	96.0%	25	8.3%	
3	0	46	102	204	0	25	25	67	10	55	1	1	1	1	212	353	97.8%	28	10.3%	
4	0	25	124	43	626	0	17	17	64	15	93	1	2	2	42	137	650	95.1%	5	7.3%
5	0	53	167	63	644	1	26	26	113	25	49	2	2	2	42	146	731	95.6%	12	11.7%
6	0	21	187	113	834	1	16	16	126	14	51	0	0	0	42	128	128	99.2%	11	7.9%
7	0	25	213	36	906	0	16	16	142	13	11	0	0	0	42	101	355	82.7%	16	13.1%
8	0	24	237	68	492	1	16	16	156	16	23	0	0	0	42	114	114	94.1%	11	9.4%
9	0	34	275	35	2027	0	22	22	161	29	73	0	0	0	42	112	355	7	9.4%	
10	0	25	331	114	1131	1	15	15	149	11	63	2	2	2	42	112	1228	86.4%	7	5.4%
11	0	34	363	140	1277	1	23	23	214	12	57	1	1	1	42	54	1375	52.9%	16	8.7%
12	0	24	363	65	2340	2	15	18	236	19	57	1	1	1	42	56	1471	95.4%	4	4.3%
13	0	36	403	14	1554	0	27	27	263	50	33	0	0	0	42	23	1444	42.5%	8	14.8%
14	0	16	413	17	1376	3	13	13	273	32	33	3	7	7	42	28	1534	72.7%	7	21.2%
15	0	54	454	15	1741	1	14	19	292	36	74	1	1	1	42	35	1547	71.5%	5	6.1%
16	0	3	464	6	1697	6	3	6	292	0	0	1	1	1	42	6	1547	10.0%	3	54.3%
17	0	2	453	2	1597	3	9	9	292	0	0	0	0	0	42	3	1550	0	0	
18	0	2	453	2	1597	3	3	3	292	0	0	0	0	0	42	3	1550	0	0	
19	0	2	453	2	1597	3	3	3	292	0	0	0	0	0	42	3	1550	0	0	
20	0	2	453	2	1597	0	0	0	292	0	0	0	0	0	42	3	1550	0	0	
21	0	1	453	1	1597	2	2	2	292	0	0	0	0	0	42	3	1550	0	0	
22	0	2	453	2	1597	0	0	0	292	0	0	0	0	0	42	3	1550	0	0	
23	0	2	453	2	1597	2	2	2	292	0	0	0	0	0	42	3	1550	0	0	
24	0	2	453	2	1597	2	2	2	292	0	0	0	0	0	42	3	1550	0	0	
25	0	2	453	2	1597	0	0	0	292	0	0	0	0	0	42	3	1550	0	0	
26	0	2	453	2	1597	0	0	0	292	0	0	0	0	0	42	3	1550	0	0	
27	0	2	453	2	1597	0	0	0	292	0	0	0	0	0	42	3	1550	0	0	
28	0	2	453	2	1597	0	0	0	292	0	0	0	0	0	42	3	1550	0	0	
29	0	2	453	2	1597	0	0	0	292	0	0	0	0	0	42	3	1550	0	0	
30	0	2	453	2	1597	0	0	0	292	0	0	0	0	0	42	3	1550	0	0	

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W401-11 - COMM ZONE SITUATION REPORT - 7 JUL 1968
5000' STATISTICS REPORT 0800Z AT 1500Z JAV: 30 CDT 04:15

DATE OF JACKET - ORALN ST DISPOSITIONS. LEVEL 4 GS

DAY	ADMISSIONS	EVACUATED	REFUSED TO DUTY	WITH NO	NO. DAY	COUNT	TOTAL CAPUL	PERCENT	DAY	2000	PERCENT	EVACUATED	DAY	PERCENT	REMAINING	
1	23	23	117	3	28	28	23,31	1	1	14	70	5,1,11	42	31,111		
2	21	4*	341	55	12	27	39	57	13,77	2	219	289	30,50	146	*0,33	
3	16	7*	273	737	63	35	99	156	28,40	3	151	151	58,25	183	59,22	
4	23	97	148	65	27	108	27	408	93,33	4	97	119	58,3	94,93	127	
5	23	120	42	477	73	35	119	375	93,34	5	25	55	53,72	79	51,16	
6	27	153	174	1151	63	28	78	451	58,31	6	112	765	55,72	85	42,29	
7	35	149	125	1276	64	40	74	525	62,95	7	95	851	53,42	88	53,42	
8	31	223	131	1437	77	53	72	595	45,21	8	97	95	53,34	92	56,79	
9	34	255	52	1464	42	45	45	682	80,73	9	43	377	*4,82	65	68,33	
10	26	282	143	1612	54	28	92	742	36,63	10	36	1073	56,43	76	46,97	
11	24	536	232	184	53	52	67	659	23,65	11	126	1198	55,51	110	48,27	
12	24	330	111	1422*	42	24	73	882	54,44	12	3	3	59,73	91	67,91	
13	51	361	28	1352	51	35	76	953	128,41	13	0	25	1328	48,37	48	81,36
14	24	393	33	1945	35	24	63	1021	101,61	14	2	23	1327	57,13	24	56,71
15	25	415	39	2128	14	54	44	1069	75,42	15	4	23	1347	31,25	20	31,25
16	6	416	6	2033	6	0	6	1075	160,00	16	8	8	1355	155,33	12	203,33
17	2	415	5	2133	5	2	5	1080	106,67	17	3	3	1358	100,00	7	233,33
18	9	416	2	2133	4	3	4	1084	101,	18	3	3	1359	3,	2	3,
19	2	415	2	2133	2	2	2	1086	J,	19	3	3	1359	J,	3	J,
20	2	415	2	2133	2	2	0	1056	0,	20	3	0	1359	0,	0,	0,
21	2	415	2	2133	2	2	0	1036	J,	21	0	0	1359	0,	0,	0,
22	0	415	0	2133	0	0	0	1086	J,	22	3	3	1359	J,	3	J,
23	2	415	2	2133	1	1	0	1086	J,	23	3	3	1359	J,	3	J,
24	2	415	2	2133	1	1	0	1086	J,	24	3	3	1359	J,	3	J,
25	0	415	0	2133	0	0	0	1086	J,	25	3	3	1359	J,	3	J,
26	2	415	2	2133	0	0	0	1085	J,	26	3	3	1359	J,	3	J,
27	2	415	2	2133	1	1	0	1086	J,	27	3	3	1359	J,	3	J,
28	2	415	2	2133	2	2	0	1086	J,	28	3	3	1359	J,	3	J,
29	2	415	2	2133	0	0	0	1086	J,	29	3	3	1359	J,	3	J,
30	2	415	2	2133	0	0	0	1086	J,	30	3	3	1359	J,	3	J,

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NAME: III - COMBAT ZONE SIMULATION SUB-MODEL, -----SIMULATION IT-3, DAY: 30 Constant 15
DAILY SUMMARY - PATIENT DISPOSITIONS, LEVEL I - 40,000
AFTER 4 AT FAC. TO FAC. WITH NO CONV CONV TOTAL CUMUL PERCENT

DAY	ADMISSIONS	EVACUATED	RETURNED TO DUTY	DEATH	DISCHARGED	DISMISSED	EVACUATED	CUMUL PERCENT	EVACUATED	CUMUL PERCENT	EVACUATED	CUMUL PERCENT	REMAINING
0-DAY	AFTER 4	AT FAC.	TO FAC.	WITH NO	CONV CONV	TOTAL	DAY	24H PERCENT	DAY	CUMUL PERCENT	DAY	CUMUL PERCENT	DAY PERCENT
1	21	21	183	183	3	25	25	12.25%	6	2.94	39	13.12	13.4
2	14	35	516	639	4	23	24	4.9	62	11.70	236	38.47	372
3	15	50	389	1085	16	36	65	6.93	36	6.91	322	56.7	79.7
4	12	62	2*2	1350	16	17	33	11.8	12.44	6	11.0	2.36	457
5	15	77	134	1469	24	21	45	163	29.22	2	112	1.31	114.17
6	4	85	2*6	1717	29	11	43	233	15.53	7	119	2.73	115.3
7	11	96	141	1908	69	17	56	259	27.72	4	123	1.98	133.59
8	13	110	177	2365	54	18	53	309	26.74	5	128	2.67	147.35
9	9	115	98	2133	39	13	58	54.01	367	1.28	3	128	1.28
10	17	132	217	2841	58	24	62	429	26.51	5	133	2.14	114
11	11	155	276	2678	35	23	55	494	21.67	17	153	5.67	192
12	21	177	37	177	55	28	53	557	32.93	2	152	1.75	34.76
13	14	191	43	2844	27	18	45	602	72.54	3	152	1.	58
14	19	213	54	2952	25	53	652	64.94	3	152	1.	25	214.3
15	5	210	45	2397	37	9	46	698	96.22	1	153	1.46	32.47
16	8	216	9	3006	40	1	41	739	455.59	2	153	0*	33
17	3	216	3	3030	17	0	17	756	566.67	0	153	0*	0
18	3	216	1	3113	19	3	19	775	1900.00	2	153	2.	2195
19	0	210	0	3113	16	2	16	741	3	153	2.	2195	0*
20	0	210	0	3032	15	0	13	804	0*	0	153	0*	2195
21	1	210	1	3113	17	1	17	821	0*	0	153	0*	0
22	0	210	0	3232	11	2	11	832	0*	0	153	0*	2195
23	2	216	2	3113	12	2	12	842	0*	0	153	0*	0
24	2	216	2	3032	6	2	6	850	0*	0	153	0*	2195
25	3	216	3	3113	6	2	6	858	0*	0	153	0*	2195
26	0	210	0	3032	6	0	6	866	0*	0	153	0*	2195
27	3	216	3	3113	4	2	4	873	0*	0	153	0*	2195
28	3	216	3	3113	3	2	3	875	0*	0	153	0*	2195
29	0	210	0	3032	4	0	4	877	0*	0	153	0*	2195
30	0	210	0	3113	4	0	1	878	0*	0	153	0*	2195

NAME II - COMBAT ZONE SIMULATION SUB-MODEL - SIMULATION II-3
SUMMARY STATISTICS AFTER END OF DAY 30

06/17/77

DAY 30

COMBAT 15

PATIENT DISPOSITION SUMMARY BY PATIENT CLASS

PATIENT CLASS	IN PATIENTS ADMITTED TO EVAC	OUT PATIENTS ADMITTED TO DIED
1	1	1
2	2	1
3	47	42
4	19	12
5	32	11
6	28	24
7	13	13
8	16	5
9	0	0
10	15	14
11	45	36
12	47	31
13	125	97
14	5	3
15	19	10
16	3	2
17	22	15
18	7	3
19	14	11
20	23	20
21	12	11
22	1	2
23	15	5
24	39	30
25	64	74
26	32	25
27	22	17
28	24	23
29	15	17
30	75	54
31	162	137
32	126	113
33	122	97
34	5	5
35	69	55
36	259	197
37	97	74
38	49	33
39	128	97
40	5	4
41	69	45
42	15	12
43	15	7
44	37	24
45	7	4
46	44	32

NAME		ZONE		SIMULATION		SIMULATION		DATE	
		SUB-MOD. L.		END OF COMBAT		END OF COMBAT		11-59	
		SUMMARY STATISTICS AFTER							
62	162	64	38	0	569	569	0	0	0
63	21	1	17	2	12	11	1	1	1
64	74	53	51	3	9	9	1	1	1
65	164	16	49	6	0	0	0	0	0
66	15	2	11	1	262	259	3	3	3
67	51	1	0	1	1	1	1	1	1
68	11	5	6	3	0	0	0	0	0
69	127	67	73	3	173	174	3	3	3
70	54	12	5	2	35	35	3	3	3
71	51	11	18	2	5	5	1	1	1
72	52	37	15	1	107	107	1	1	1
73	35	25	5	1	364	364	1	1	1
74	7	4	3	0	92	92	1	1	1
75	15	5	9	1	20	20	1	1	1
76	60	9	1	0	0	0	0	0	0
77	34	69	15	1	116	116	1	1	1
78	12	2	14	1	0	0	1	1	1
79	151	75	59	2	31	31	1	1	1
80	64	6	1	0	0	0	0	0	0
81	13	7	5	1	1	1	1	1	1
82	60	54	47	5	2	2	1	1	1
83	67	3	0	0	0	0	0	0	0
84	109	54	51	1	115	115	1	1	1
85	41	1	23	1	1	1	1	1	1
86	113	14	42	2	3	3	1	1	1
87	71	4	2	0	16	16	1	1	1
88	72	64	53	3	14	13	1	1	1
89	73	3	5	1	0	0	1	1	1
90	125	85	37	3	97	96	2	2	2
91	37	25	12	0	1	1	1	1	1
92	75	0	0	0	2105	2105	1	1	1
	TOTALS	5595	2178	2194	223	2111			

NAME: LT - JOHNSON, ZONE SIMULATION SUPERVISOR
SUMMARY STATISTICS FOR 2021 AT 0600Z
PAGE 1 OF 2

PATIENT DISPOSITION SUMMARY BY TIME SPENT IN THE SYSTEM

DAY	HRS	DISPOSITION	TOTAL
		WALK-IN	WAC
1	21.11	221	1117
2	20.8	7	1076
3	26.5	3	237
4	14.1	3	143
5	7.0	0	70
6	5.6	0	56
7	5.9	3	56
8	4.8	2	48
9	5.2	3	52
10	21	3	21
11	25	0	25
12	21	3	23
13	17	3	17
14	23	0	23
15	25	0	25
16	13	3	13
17	1	3	1
18	0	3	0
19	3	3	3
20	0	0	0
TOTALS	326.3	229	5736
PERCENTAGE	57.5%	33.4%	

FINAL SUMMARY.

DEPARTMENTS	DUPATIENTS	TOTAL	PERCENT
TOTAL ADMISSIONS	3545	2111	5736
TOTAL LEFT SYSTEM	3545	2111	5736
*RETURNED TO DUTY	1174	2115	100.00
*EVACUATED	2134	1	57.5%
*DIED	223	5	38.4%
TOTAL REMAINING	1	1	4.2%